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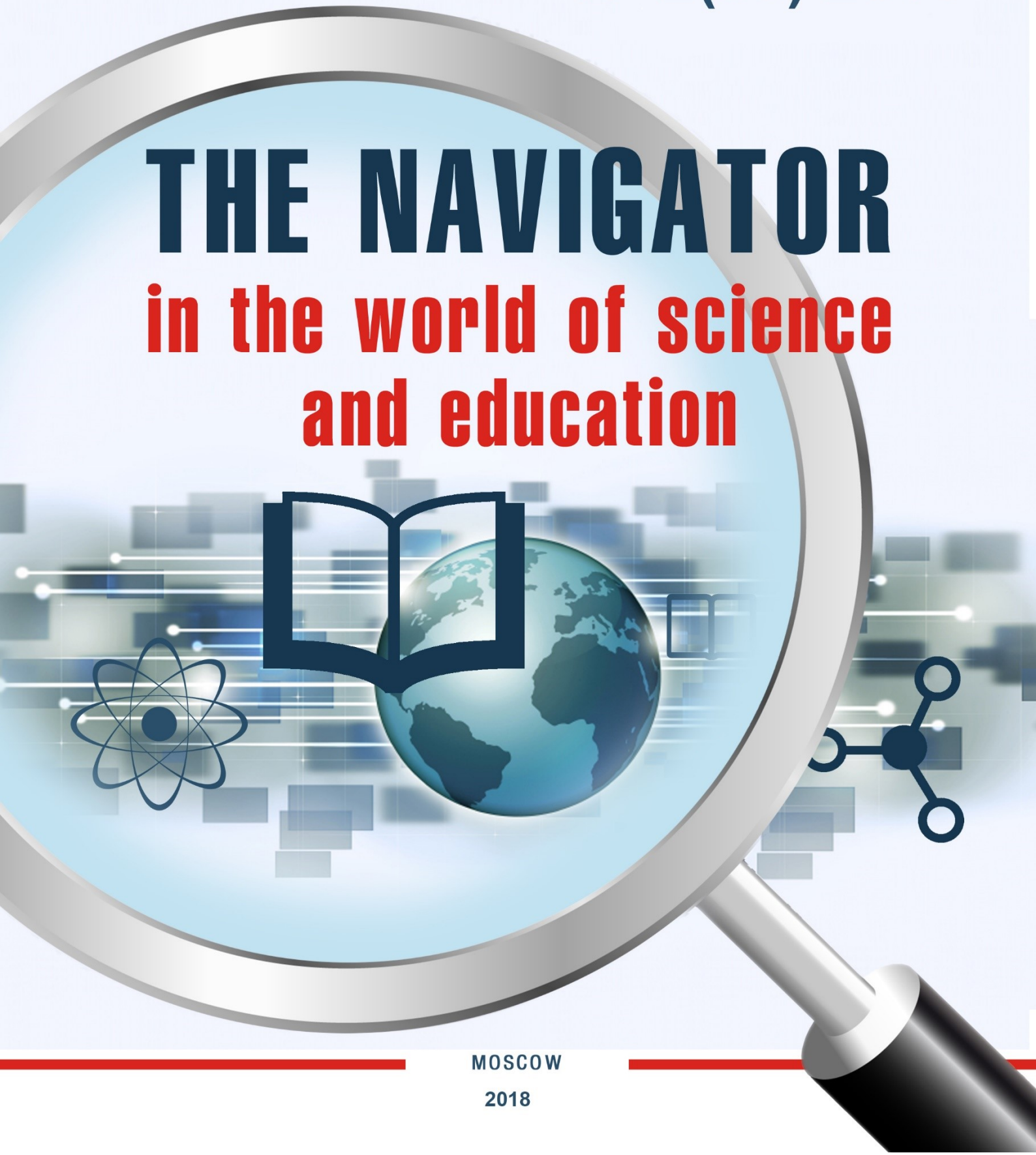

MOSCOW

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# ADVERTISING AND TECHNICAL DESCRIPTION "Algorithm of Differential Evolution with the Scheme DE/rand/1X/bin for the Solution of Problems of Multicriteria Optimization"

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***UDC*** *004.89,004.021*
***GRNTI*** *27.41.41, 28.19.23, 28.23.29, 27.03.19, 28.19.15*

## 1. Functional purpose of a product, scope, its restrictions

The developed genetic algorithm with differential evolution is intended for the solution of problems of multicriteria optimization in technical, economic and social systems. Its use allows to increase number and accuracy of the found optimal solutions.

### *1.1 Features and principles of work of algorithm*

The developed algorithm uses the principles of differential evolution (Differential Evolution – DE) at development of population and formation of her new individuals. Unlike the traditional schemes of differential evolution intended for one-criteria optimization its modification for definition of a great number of Pareto in problems of multicriteria optimization (MKO) is offered. The original scheme of differential evolution – DE/rand/1X/bin is for this purpose developed.

The analysis of various schemes of differential evolution allows to draw a conclusion that very often the choice of the second parent, and also other (two and more) individuals necessary for creation of the descendant, is made incidentally. At the same time it is not guaranteed that the new individual received as a result will be better than the parent. Generally it leads to decrease in a variety of population, and in the conditions of MKO to preservation in it a small share, unchangeable in the course of search, of not dominated decisions. Increase in intensity of operation of a recombination for DE often leads to growth of a casual component in the course of optimization, loss of the found optimal solutions. At the same time, for increase in probability of creation of individuals, the dominating parents, various options of vectors of their changes formed by a set of combinations of the individuals chosen for a recombination can be investigated. It means for the classical scheme DE/rand/1/bin that each of three individuals with indexes $r_1, r_2, r_3$ it can be chosen as the second parent (fig. 1).

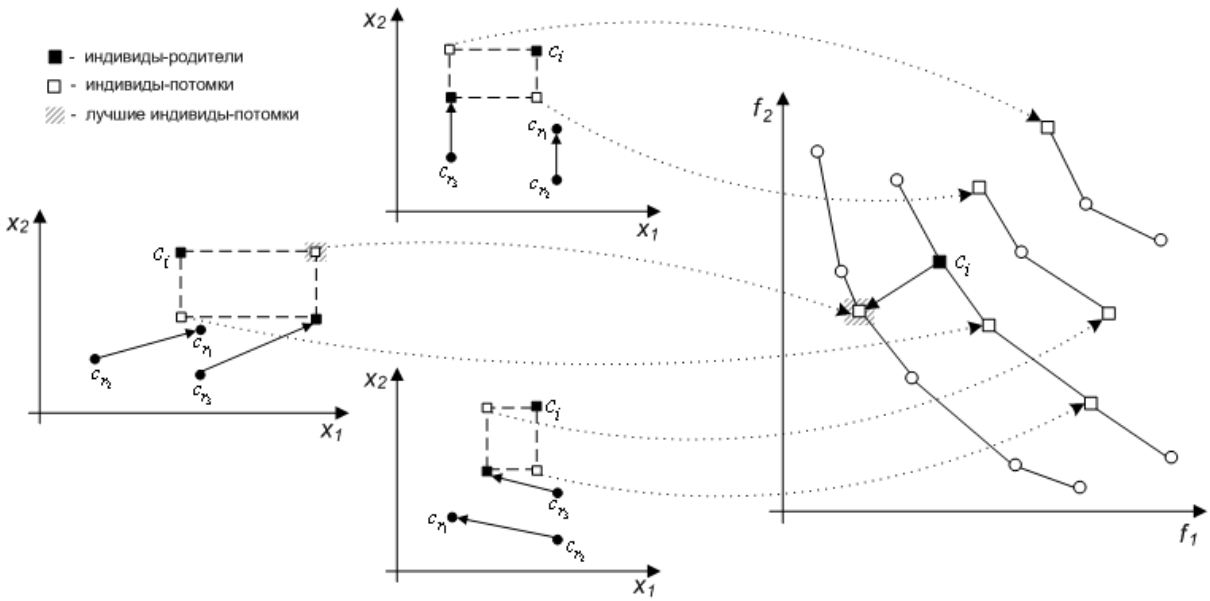


Fig. 1. Influence of the choice of different parental individuals in DE by search of Pareto-optimal decisions

In a case when not one of combinations of individuals in the operator of a recombination did not allow to receive the individual descendant better than the individual parent, the last passes into the next generation. In general, such scheme of differential evolution DE/rand/1X/bin has to provide more active replacement of the dominated individuals of population. For management of the found not dominated decisions, the offered option of differential evolution has to be integrated by their placement on Pareto's border into other genetic algorithms of multicriteria optimization. The algorithm of the offered scheme of differential evolution for genetic algorithms of multicriteria optimization has the following appearance.

***Algorithm*** of DE/rand/1X/bin ( $n_P, n_G, CR, F$ ),

where *CR[0, 1*∈] – the parameter of management of intensity of a krossingover;

*F*> 0 – the parameter scaling extent of change of individuals;

$n_P$ population size;

$n_G$ number of generations.

**Step 1**. To create initial population the size $n_P$ and to calculate values of suitability of her individuals. *t* = 0.

**Step 2**. For each individual of population $c_i, i = 1,...,n_P$ to perform the following operations.

2.1. To choose three different random numbers (an index of individuals) $q, r, s \in 1,...,n_P \mid q \neq r \neq s$.

2.2. To make a great number of the individuals chosen as candidates for parents by empty *R* =∅.

2.3. Among a set of indexes of individuals { *q*, *r*, *s* } to choose any, not belonging *R*. To appropriate it to a variable $r_3$ and to consider as the individual parent's index. $R = R + \{r_3\} \mid r_3 \notin R$.

2.4. To variables $r_1, r_2$ it is any to appropriate other chosen indexes. $r_1 = q \vee r \vee s \mid r_1 \neq r_3$, $r_2 = q \vee r \vee s \mid r_2 \neq r_1 \neq r_3$.

2.5. To choose a random number $k \in 1,...,n$.

2.6. On the basis of all genes $c_{i,j}, j = 1,...,n$ individual $c_i$, to create the intermediate individual $c'_i$:

$$c'_{i,j}(t+1) = \begin{cases} c_{r_3,j}(t) + F(c_{r_1,j}(t) - c_{r_2,j}(t)), \text{если}\,(\text{rand}(0,1) < CR) \vee (j = k); \\ c_{i,j}(t), \text{иначе}. \end{cases}$$

2.7. To choose the individual for the next generation, or to create the new trial individual according to one of the following rules:

a) if $c'_i(t+1) \succeq c_i(t)$, $c_i(t+1) = c'_i(t+1)$;

b) if $c_i(t) \succeq c'_i(t+1)$ and $\{q, r, s\} \notin R$, to pass to a step 2.3;

c) if $c_i(t) \succeq c'_i(t+1)$ and $\{q, r, s\} \in R$, $c_i(t+1) = c_i(t)$;

d) if $c_i(t) \prec\succ c'_i(t+1)$, $c_i(t+1) = c_i(t)$ or $c_i(t+1) = c'_i(t+1)$.

**Step 3**. *t* = *t+1*.

**Step 4**. If $t > n_G$, to finish, differently to pass to a step 2.

Thus, the offered DE option differs in a possibility of formation of the trial individual with attraction of various couples of parental individuals. In them the first individual remains invariable, and the second can repeatedly get out of a great number of the individuals who are incidentally selected in the current population before procedure of a recombination. Usually the maximum number of such couples does not exceed three, however, when using alternative rules

of a recombination in the scheme DE, such couples can be more. The number of checks of different combinations of parental individuals for formation of one descendant depends on structure of the current population. Practical researches of the considered scheme of differential evolution showed that most often several "attempts" during creation of the trial individual are used when in population there are a lot of copies of one individual, or it is filled by a large number of not dominated individuals. In such cases generation of different options of one intermediate individual allows to maintain a variety of population, to reduce probability of a convergence of algorithm to locally optimum great number of Pareto. Unlike usual, in the offered version of differential evolution, the search trajectory in space of variables is formed depending on an arrangement of individuals and, first of all, the received descendant in space of criteria. As a result, those sites of space of variables where the decisions which are not dominated rather already studied decisions contain are investigated. It should be noted that when comparing trial and current individuals both can be not dominated (operation 2.7 the rule (g)) and, therefore, to apply for transition to the next generation. In this case procedure of the choice of the individual (individuals) has to be defined to the HECTARE of MKO using this scheme of differential evolution.

***1.2. Scopes and restrictions of algorithm***

The developed algorithm is intended for the solution of problems of multicriteria optimization in technical, economic and social systems. At the same time, the algorithm invarianten to conditions and a scope and if necessary can be adapted to any mathematical model of a problem of multicriteria optimization. Also created genetic algorithm can be integrated into the existing information systems of different function having open architecture and requiring the solution of problems of multicriteria optimization of the data processed in them.

**2. The used technical means**

The software is developed in the C# language for work in the environment of Microsoft .NET Framework of the 2nd operating room the Microsoft Windows XP system above. Hardware of Intel Pentium 4, 2,26 GHz, 512 Mb.

**3. Special conditions and requirements of organizational, technical and technological character**

At practical use of algorithm it is necessary to consider that the speed of search depends on the clock frequency of the processor and volume of random access memory (especially by optimization of problems of big dimension).

**4. Conditions of transfer of program production or its sale**

Program documentation is transferred for use in any purposes from the written consent of the author.

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## ADVERTISING AND TECHNICAL DESCRIPTION "Mathematical Model and Algorithm of Multicriteria Optimization of System of a Volume Hydraulic Actuator"

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***UDC*** *004.49,621.226*
***GRNTI*** *27.41.41, 28.19.23, 28.23.29, 55.03.47, 55.03.14*

**1. Functional purpose of a product, scope, its restrictions**

The mathematical model and genetic algorithm are developed for multicriteria optimization of system of a volume hydraulic actuator (GP) at a stage of its design. Their

application allows to define not only values of parameters of a design of GP, but also to estimate its optimum operational characteristics.

***1.1 Maintenance of mathematical model and its feature***

Determination of values of design data of GP in combination with achievement of optimum indicators of its operational characteristics is connected with their formalization in the form of criteria of a problem of multicriteria optimization (MKO). For the mathematical description of dynamic properties of elements of the accepted settlement scheme of a volume hydraulic actuator (fig. 1) the differential equation of balance of forces which are really operating on a hydraulic cylinder, the equation of expenses, the equation of the movement of model of a hydraulic cylinder with the linearized characteristics were used.

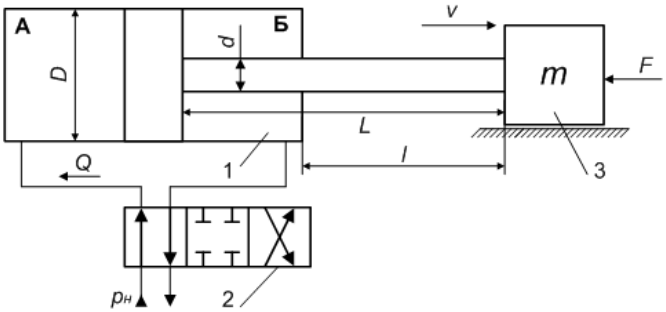


Fig. 1. The settlement scheme for a problem of MKO of a hydraulic actuator:
1 - a hydraulic cylinder, 2 - the hydrodistributor,
3 - the specified mass of loading

By analytical methods despite some simplifications accepted because of complexity of calculations two criteria describing stability allowed to receive the joint solution of the differential equations (damping coefficient $f_\xi$) and power consumption (coefficient of specific power $f_{\overline{N}}$), the GP dynamic properties allowing to estimate at a design stage with a hydraulic cylinder with a unilateral rod.

$$f_{\overline{N}} = F \cdot \frac{(Q + K_{Qp} \cdot \frac{2}{3} p_н)}{m \cdot \sqrt{\frac{p_н}{\rho}} \cdot s_A} \cdot \sqrt{\frac{2 \cdot \left( p_н - \frac{F}{s_Б} \right)}{\rho}} \to \max,$$

$$f_\xi = \frac{K_{Qp}}{2 s_A^2} \cdot \sqrt{\frac{m}{\frac{1}{C_{гц}} + \frac{1}{C_{оп}} + \frac{1}{C_{тр}}}} \to \max,$$

where $K_{Qp} > 0$ coefficient of the steepness account perepadnoy characteristics of the hydrodistributor, the standard size and the area of a working window (w) defining it, m4 with/kg;

$$\omega = \frac{Q + K_{Qp} \cdot \frac{2}{3} p_н}{\mu \cdot \sqrt{\frac{p_н}{\rho}}}$$ area of a working window of the hydrodistributor, sq.m;

$\mu$ = 0,7 – coefficient of an expense of a working window of the hydrodistributor;

$$s_A = \frac{\pi D^2}{4}$$ effective area of the piston, m;

$$D = \sqrt{\frac{4F}{\pi p_н \eta_{мц} \eta_{гс}}}$$ diameter of the piston, m;

$s_Б = \frac{\pi}{4}(D^2 - d^2)$ the effective area of the piston from a rod, m;

$Q = \frac{\pi \cdot D^2}{4} \cdot \frac{v}{\eta_{оц}}$ consumption of working liquid in a pressure line, m3/c;

$v$ – speed of a working piston stroke, m/s;

$F$ – effort on a rod of a hydraulic cylinder, N;

$p_н$ nominal pressure in a pressure line, Pa;

$\eta_{мц}$= 0,93 … 0,97 – the mechanical efficiency of a hydraulic cylinder considering mechanical losses of energy on friction;

$\eta_{гс}$= 0,85 … 0,90 – the hydraulic efficiency considering losses of energy in hydraulic system of a hydraulic actuator;

$\eta_{оц}$=0,96 … 0,98 – the volume efficiency of a hydraulic cylinder considering losses of energy with leak of working liquid;

$\rho$ density of working liquid, kg/m3;

$m$-inertial weight taking into account the attached elements of a design and volume of working liquid, kg;

$V_{гц} = s_A \cdot L$ maximum volume of a working cavity of a hydraulic cylinder, m3;

$L$ – maximum piston stroke, m;

$C_{гц}, C_{оп}, C_{тр}$ respectively coefficients of rigidity of a hydraulic cylinder, support of its fixing and the attached pipelines, N/m.

On a number of the specified parameters, and also the relations between them are imposed restrictions, compliance to which is obligatory at hydraulic actuator MKO. First, it has to be considered that GP is the system including the standardized and unified equipment therefore values of the following its parameters are regulated by GOST: *D*, *d*, *L* (GOST 12447-80 and GOST 6540-68), *rn* (State standard specification 12445-80), *Q (State standard specification 13825-80)*, etc. In the course of research of various options of designs of GP, for each of them values of the valid realized efforts on a rod, speeds of movement of the piston pay off and estimated. Also performance of conditions of durability at compression and stability of a rod of a hydraulic cylinder is obligatory. On the basis of the GP valid working parameters received at testing calculation the decision on compliance of this option of its design to requirements of a design assignment is made.

The given mathematical model of a problem of MKO of a hydraulic actuator contains a set of parameters among which are entrance $\{F, v, l, m, \eta_{мц}, \eta_{гс}, \eta_{оц}\}$, and the days off defining GP design respectively $\{D, d, p_н, L, w, F_p, v_p\}$. For determination of some technical parameters the known dependences are used that allows to limit the studied space of variables only to parameters with the varied values. In this case in the course of optimization the following parameters varied $\{d, p_н, K_{Qp}, L, m\}$, which each combination of values, at the same basic data on design, allows to define some design of GP unambiguously. At the subsequent its assessment with use of the chosen criteria of MKO it was revealed that any of options of a design cannot be optimum at the same time by all criteria as interference between these parameters such is that improvement of indicators of a hydraulic actuator by one criterion leads to their decrease on another. So, the aspiration to receive hydraulic actuator design option with a bigger specific power, for example, due to increase in nominal pressure, leads to decrease in its stability during the work with the growing loading on the attached weight. On the other hand, the hydraulic actuator designed for similar conditions of the specification and having other

geometrical characteristics can have a smaller specific power. However in combination with rather big coefficient of damping such GP has a possibility of steady work with a bigger inertial weight. Thus, as a result of the solution of a problem of MKO of a hydraulic actuator the set of Pareto-optimal designs of hydraulic actuators with various combination of criteria of specific power and damping is provided to the expert for the analysis. It allows to investigate all possible options of the GP system, most precisely to define limits of its opportunities, to obtain data for making decision on expediency of further efforts on improvement of this or that indicator of its quality.

***1.2. Algorithm of definition of Pareto-optimal options of a gidproprivod***

When determining a set of Pareto-optimal options of hydraulic actuators the principles of evolutionary modeling where each studied object is treated as the individual are used. Its properties are described in the form of a chromosome with a set of the genes containing values of the varied technical parameters of a hydraulic actuator. On each iteration of HECTARE the set of the projects of a hydraulic actuator forming population of individuals is analyzed. Each of them is estimated according to Pareto principles by the chosen criteria. In the course of evolutionary modeling members of population change so that as a result in it the individuals forming global border of Pareto in space of criteria are allocated. For automation of its definition one of the most known HECTARES for multicriteria optimization of NSGA-II with cluster modification was used. The necessity of its use is caused by the fact that process of optimization is carried out both on continuous, and on discrete sets of parameters of design therefore the space of decisions will be rather fragmented. Integration into HECTARE of the principles of a clustering of population in space of decisions will allow to investigate systemically its discrete sites, lokalizuya and keeping Pareto-optimal decisions. Procedure of their definition at optimum design of a hydraulic actuator includes the following stages.

1. The basic data for the MKO GP mathematical model containing data on requirements of operation of GP, values of its varied parameters, possible preferences on design and operational features of installation are entered (restrictions on power, cylinder length, brand became, etc.). Here values of the operating parameters of genetic algorithm are specified: $n_P$ (population size), $p_c$ (probability of a krossingover), $p_m$ (probability of a mutation), $r_c$ (cluster radius).

2. Formation of initial population, calculation for each her individual of a rank Pareto. On its basis and according to rules of the chosen HECTARES suitability of each individual of population is calculated. On its total value the great influence is exerted by compliance to all restrictions of mathematical model. After testing calculation suitability of individuals changes according to the following rules:

- Pareto's rank of each individual of population increases by size $R * \mathrm{round}(\frac{|c_{i,K} - K|}{K})$, where $K$ – boundary value of some parameter ($K \in \{F, v\}$); $c_{i,K}$ value of parameter K for a design of GP represented by the individual $c_i, i = 1,...,n_P$; $R > 0$ – the penalty coefficient chosen depending on influence on quality of GP of level of a deviation of value of design parameter from admissible;

- if at option of a hydraulic actuator restrictions on durability and stability are broken, then the corresponding individual irrespective of his rank Pareto is considered not optimum.

3. Procedure of a clustering of population in space of decisions is carried out, its fragments (clusters), the containing individuals with the best thereby are defined ($rank(c_i) \le 2$) Pareto's ranks and values of fitness-function.

4. Formation of new population of individuals with use of operators of a krossingover and mutation of MGA. Replacement of all her individuals who are breaking restrictions of mathematical model or, having the worst ranks of Pareto (value of fitness-function), is made by centrodes of earlier found clusters.

5. Check of a condition of completion of work of algorithm. The choice from population of the individuals forming total border of Pareto.

Experiments for an assessment of influence on process of optimization of the main managing directors of parameters of genetic algorithm were made. Also influence on the chosen criteria of quality of GP of various combinations of values of geometrical parameters of a hydraulic cylinder and the hydrodistributor at design of hydraulic actuators of an asphalt spreader, auto-loader and bucket of the excavator was analysed.

***1.3. Scopes and restrictions of development***

The developed model and algorithm are intended for the solution of problems of multicriteria optimization of a hydraulic actuator at its application in various technical systems. The created mathematical model of multicriteria optimization of a hydraulic actuator is not limited to the choice of only two defining criteria and its designs with a unilateral hydraulic cylinder. The algorithm of optimization according to the similar scheme can be expanded due to improvement of mathematical model of a task and simultaneous consideration of the additional influencing types of criteria.

**2. The used technical means**

The software is developed in the C# language for work in the environment of Microsoft .NET Framework of the 2nd operating room the Microsoft Windows XP system above. Hardware of Intel Pentium 4, 2,26 GHz, 512 Mb.

**3. Special conditions and requirements of organizational, technical and technological character**

At practical use of algorithm it is necessary to consider that the speed of search depends on the clock frequency of the processor and volume of random access memory (especially at increase in number of criteria of optimization).

**4. Conditions of transfer of program production or its sale**

Program documentation is transferred for use in any purposes from the written consent of the author.

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## ADVERTISING AND TECHNICAL DESCRIPTION "3DMechanics. A particle on a circle"

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***UDC*** *378*
***GRNTI*** *14.35.07, 29.19.03, 29.29.49, 29.19.04, 29.19.15*

**Functional purpose of the program modeling the movement in the uniform field, a scope, restrictions**

**The ParticleOnCircle program modeling the movement in the uniform field** represents a complex of program modules which provide numerical simulation in real time of a task about the movement of a classical particle on a circle. The program is supplied with the graphic interface allowing to display the movement in various projections of space of coordinates – time – an impulse – energy, setting any entry conditions of the movement. The program is intended for use as an interactive illustration to courses of mechanics of the higher school. The program code written on C# can be used in grants on programming when studying object-oriented programming and library of 3-dimensional graphics.

***The ParticleOnCircle program has the following functionality:***

The appendix feigns in real time in various projections of space – time – an impulse - energy structure of solutions of a task on the movement of a particle of a circle depending on entry conditions of the movement. For this purpose

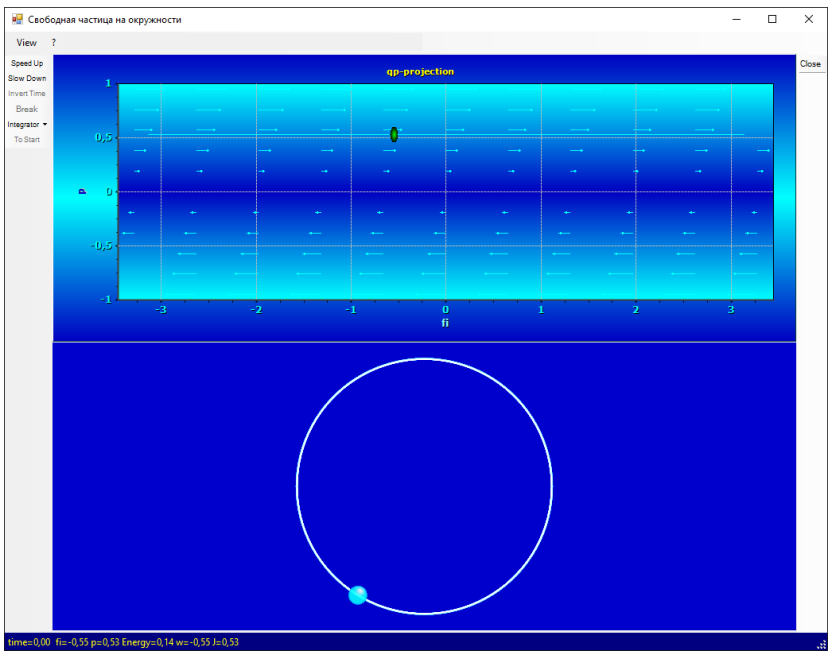
1. At the choice of entry conditions and in the course of the movement the structure of space *of tqpE* (time – coordinate – an impulse - energy) solutions of the equations of the movement of a particle on a circle in various projections is reproduced:
   a. qp and qE planes;
   b. development in time *of q(t)*, *p(t)*, *E(t)*;
   c. 3-dimensional projection *of qpE*;
   d. directly observed movement (real world);
   e. 3-dimensional projection to expanded phase space in *twJ* coordinates time-corner-action (existential Torahs *of tw*).

Each entry condition answers a separate *phase trajectory* in *tqp* space. Phase trajectories form the surfaces corresponding *to conservation laws*, or *movement integrals*. In other words, *conservation laws stratify phase space of mechanical system on subspaces of smaller dimension, and phase trajectories – on dimension subspaces unit*. At the choice of entry conditions in projections *of qp*, *qE*, *QPE* and *twJ* the current surface and the current phase trajectory on which the system will move is displayed.

2. Movement process in real time for the chosen entry conditions is modelled.

**Structure of an application window**

1. The window consists from 4-ekh boundary panels and one central panel.
2. On the top panel the menu is located.
3. On the right panel there is a button of switching off of the Close appendix.
4. On the lower panel elements of a so-called line of the status settle down. In panels of a line of the status the current cursor positions of a mouse are commented, and numerical information on entry conditions and the course of the account at the movement of system is given.
5. On the left panel the buttons operating the modes of the account, display and the choice of a method of integration of the equations of the movement are located (details are given below).
6. The central panel consists of the top and lower panels. Any of the listed above projections of space of tqpE can be brought to any of them (View menu). Any of two panels can be stretched on all central panel by the Full Screen team of a context menu (the right button of a mouse).



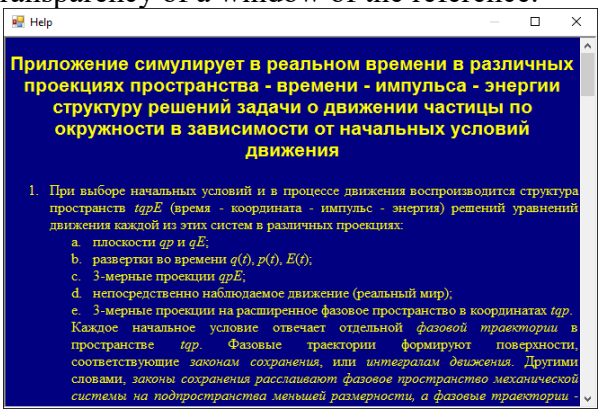
General view of an initial condition of an application window

**Menu**

- *The View menu* allows to choose the projection which is displayed on top (Top Panel) and the lower (Bottom Panel) panel of the central region of a window.

***By default at activation of the appendix***

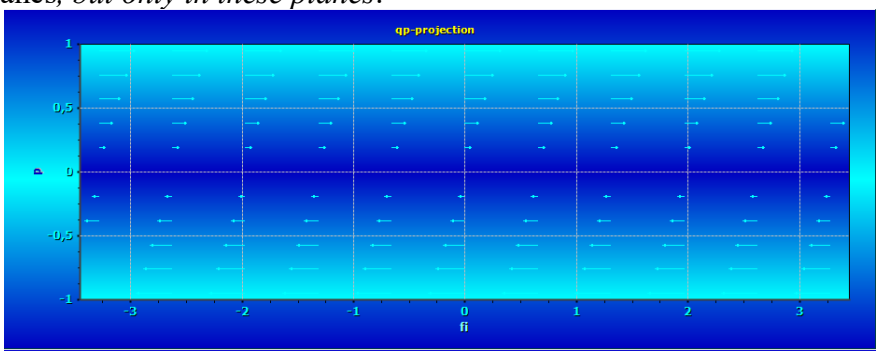
- on the top panel the plane the coordinate impulse (the QP-projection team of the View menu) is placed
- on the lower panel – the plane of the observed world (the Real World team of the View menu)
- *The menu "?"* causes a reference window. The toddler in a window of the reference allows to regulate transparency of a window of the reference.



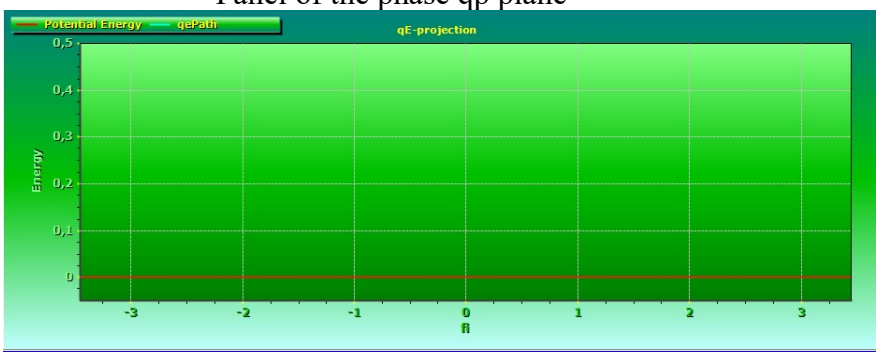

Reference window

**Task of entry conditions of the movement**

- Entry conditions of the movement are set by click on one of available points in any of the qE or qp planes, *but only in these planes*.



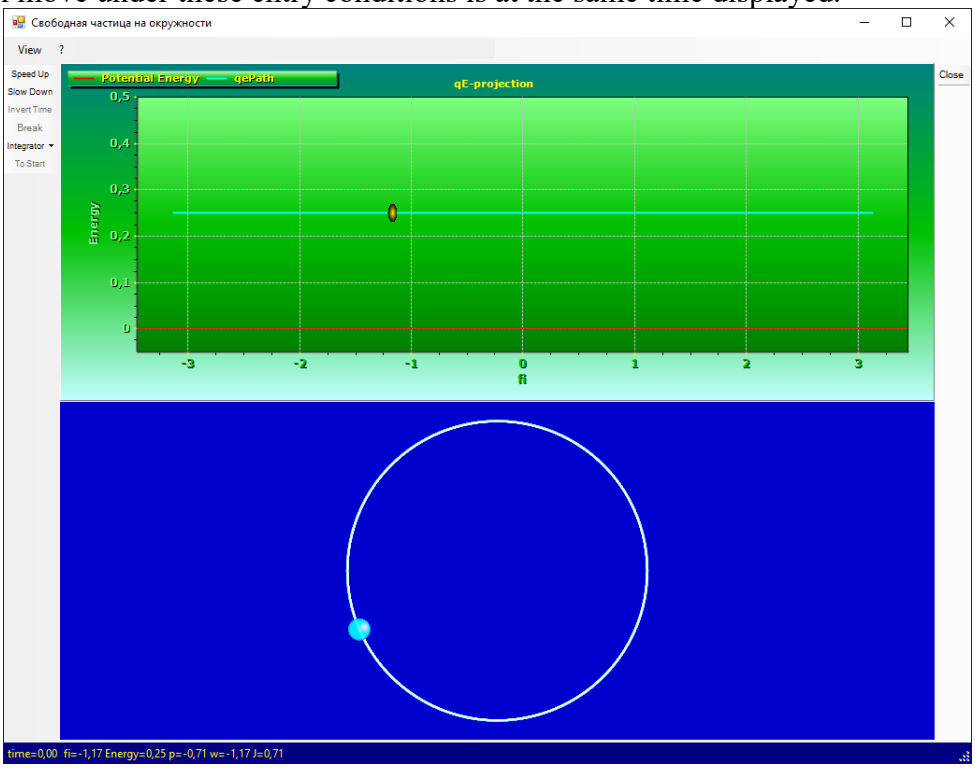

Panel of the phase qp plane




Panel of the qE plane (coordinate energy)

- Points in which the cursor takes the hand form are available to the choice of an initial state.
- In a line of the status numerical values of a point over which there is a mouse cursor, in terms of a task are displayed. For unit of mass the mass of a particle, is taken for distance unit the circle radius, and a unit of time any.

- The movement of the cursor at the choice of an initial state on one of the qE or qp panels is followed by a point sprite. This movement is synchronously reflected in the image of other panel which is on the screen at this time (if the state exists). The phase trajectory on which the system will move under these entry conditions is at the same time displayed.




Application window at the choice of entry conditions in qE projection.
On the lower panel the particle (real world) is represented.
In a line of the status time, coordinate, energy, impulse, phase and action.

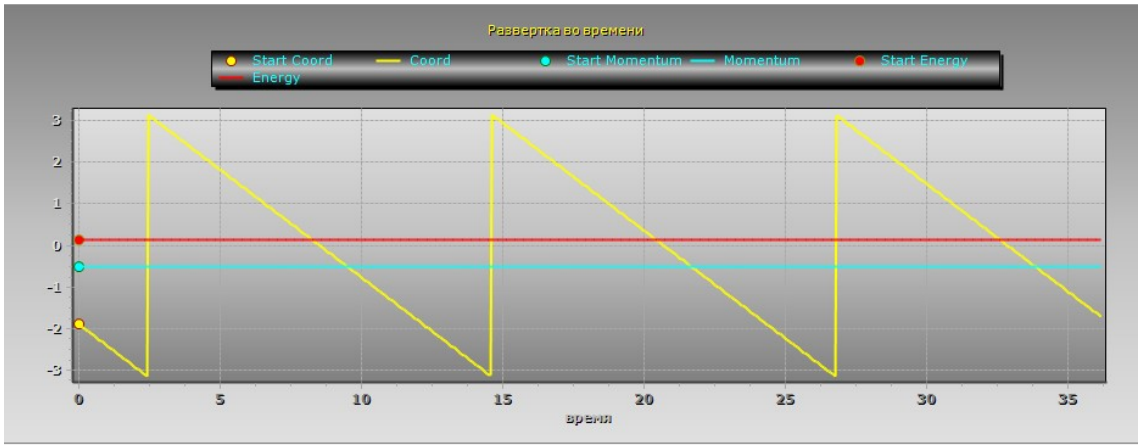
- Click by the left button of a mouse on *qE* or *a qp-projection* finishes the choice of entry conditions and leads to a start of motion with the chosen initial state (coordinate and an impulse) in an initial timepoint *of t = tstart*.
- The choice of an initial state on *a qE-projection* unambiguously fixes the initial coordinate and energy, but the impulse sign (the direction of the movement) is chosen the program in a random way. Therefore in one case the particle can have a positive impulse, in other case the initial impulse will be negative.
- The initial timepoint *of tstart* is always equal to zero.
- Shooters on the qp plane represent the vector field of change of coordinate and an impulse in the corresponding points.
- Entry conditions can be changed (are again set) in the course of the movement at any moment.

***Entry conditions can be set only click in one of the QP or QE planes.***

**View menu**

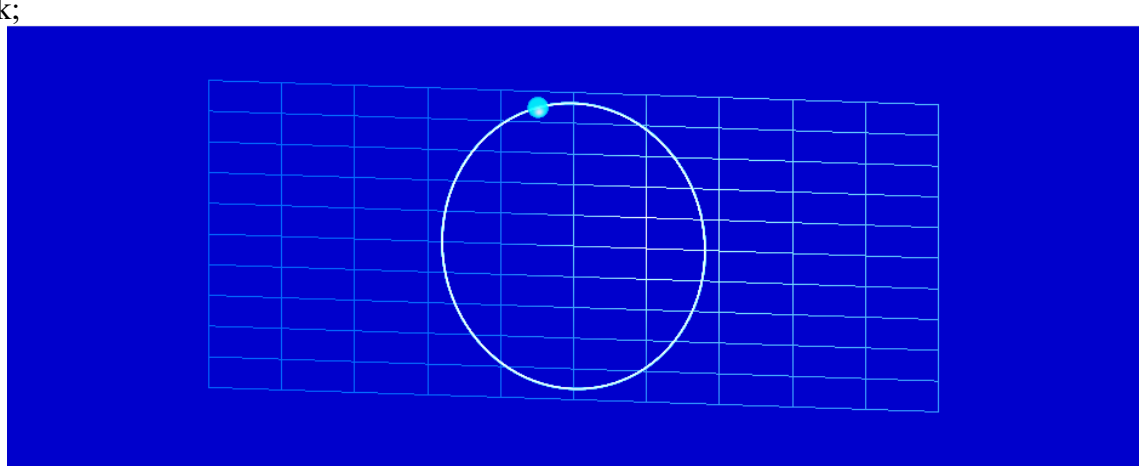
Other projections of space *of tqpE* of system can be shown in the top and/or lower part of the central panel of the screen by the choice of the corresponding teams from the View menu.

- the Q(t), p(t), E(t)-chart team shows development of the movement in the form of usual flat schedules of dependences of coordinate, an impulse and energy from time;



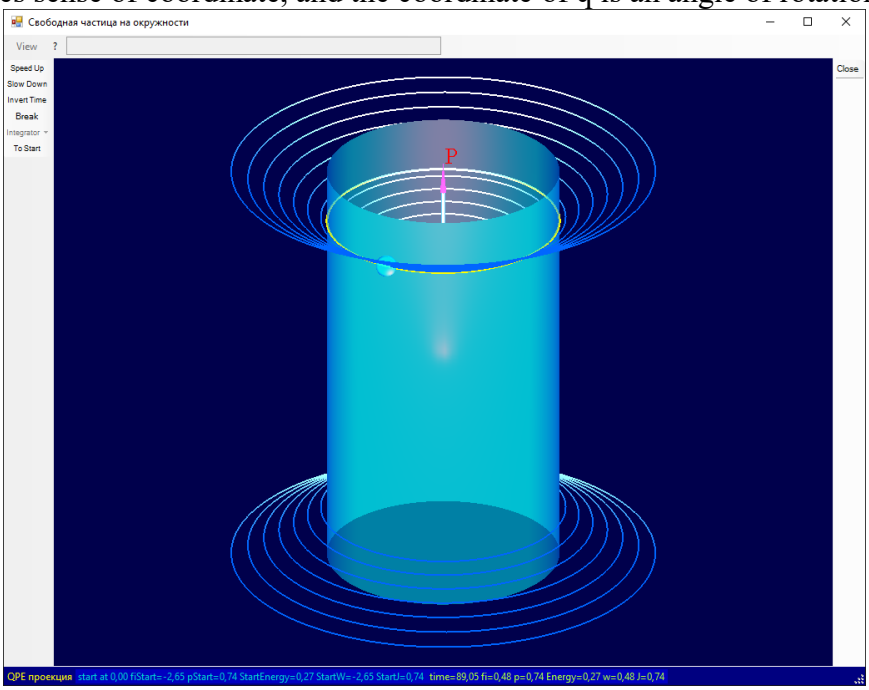

Action of the team Q(t), p(t), E(t) - chart

- the Real World team gives the three-dimensional image of moving model in an observed look;



Real world panel

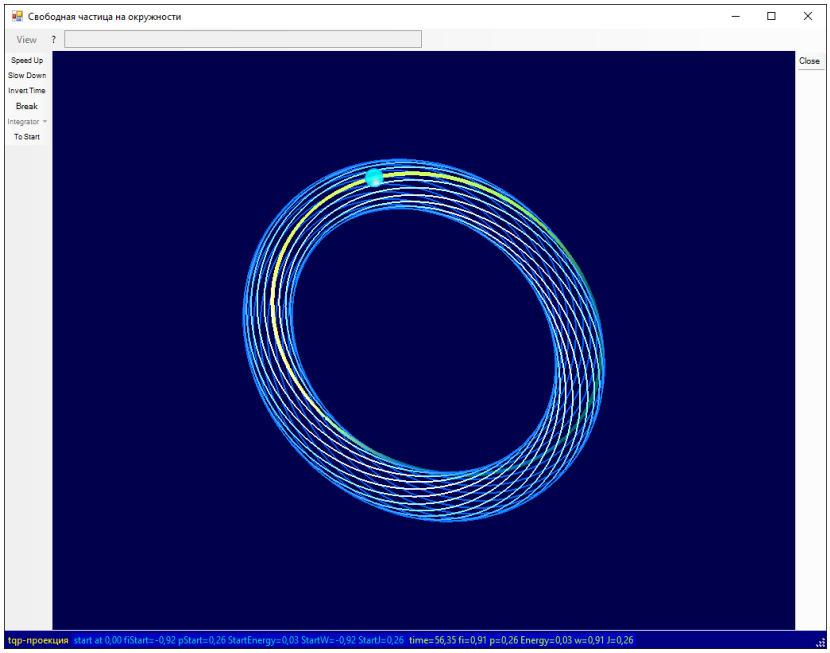
- the QPE-projection team represents a 3-dimensional projection of the solution of a task on the movement to *qpE* space in cylindrical coordinates. An impulse z, energy – distance to an impulse axis makes sense of coordinate, and the coordinate of q is an angle of rotation.




Projection *of qpE* (coordinate-impulse-energy)

- The "twJ projection" team shows a projection to space time-situation-impulse (so-called "expanded phase space") in coordinates time-action-corner. Value of action of J is

proportional to the radius of the small circle represented a Torah, and a corner of w and time of t in terms of the period – are coordinates on a surface a Torah.




twJ projection (time – a phase – action)

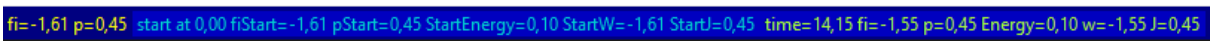
**It is impossible** to set entry conditions of the movement on the listed panels.

On panels with the 3-dimensional image (Real World, QPE, tqp) *can change appearance of the image.*

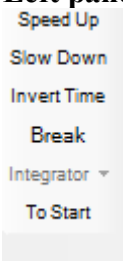
- rotating (the left button of a mouse is pressed and the mouse moves)
- changing the image scale (a mouse castor).

**Line of the status**

In the lower part of the screen, on a so-called line of the status there is an information reflecting change of a state (coordinate, an impulse, energy, time, action, a corner) during the movement and/or information on a cursor position and a state in an initial timepoint.




**Left panel**



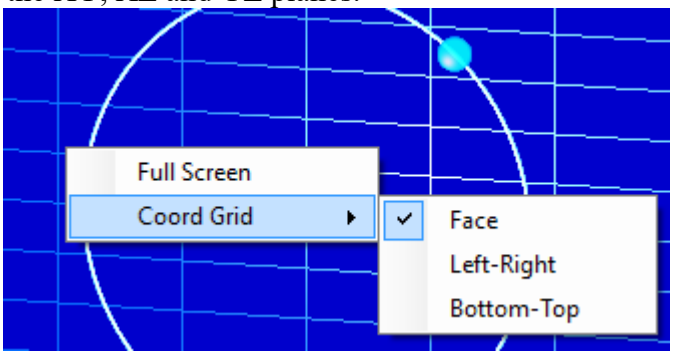

On the left panel of the screen there are following elements of management:

- (To accelerate) the Speed Up buttons and (to slow down) *Slow Down* regulate the visible speed of change of a state due to change of a step of integration on time.
- The Invert Time button allows to change the direction of time. After click on this button the system comes back to an initial state, axes of time and an impulse are reflected, and the movement is described in a new reference system – with the reflected time, since the same state.
- The Break button stops the movement, and it (Go On) resumes the movement.
- The Integrator button allows to choose an integration method.
- The To Start button returns system in a condition of the choice of entry conditions of the movement. Change of entry conditions is possible also at any moment click on the qp or qE plane.

**Context menu**

Is caused by the right button of a mouse. Generally has one Full Screen team which allows to stretch the image of the top or lower panel on all central region of the screen. The repeated call of the same team redeems former situation of panels.

For the Real World panel the context menu can have the additional teams allowing to display coordinate grids of the XY, XZ and YZ planes.




Context menu

**The objects used in the appendix**

These are objects of three types of classes

1. Author's classes.
2. The classes received from external sources, but which are not entering into library of the classes .NET.
3. Classes from the .NET library which is available on any established OS Windows Vista.

**Author's classes**

1. Classes of integration of system of the differential equations. These classes (in abbreviated form "integrators") collected in Integrators.dll library form hierarchical system. In a root of integrators there is an IIntegrator interface. Further there is his "offtaker" - the abstract class TIntegrator. Two classes RK4, LWDoPri5 inherit from TIntegrator and can generate objects. One more class DoPri5 is a successor of LWDoPri5. The class RK4 integrates the equations Runge-Kutt's by method of the 4th order. Classes LWDoPri5 and DoPri5 Dormana-Prins's by method of the 5th order. The class LWDoPri5 is the version of the class DoPri5 simplified (Lightweight). In LWDoPri5 there is no fixing of an absolute error, dependence of errors on unknown function and some other properties.

2. Two classes - the IMechSystem interface and its successor of MechSystem are in Integrators.MechSystem library. Through these classes there is an appeal to objects of integrators. The IMechSystem interface formulate a problem of integration in the form of a problem of mechanics where there is an even number of the equations of the 1st order for the coordinate and an impulse. The class MechSystem realizes the IMechSystem methods.

**External classes**

1. The classes providing use of standard library 3D - graphics of OpenGL. Classes are in dllOpenGL.cs library where in namespace of OpenGL 5 main classes Context, gl, glu, wgl and Windows are described.

2. Classes of creation of schedules united in TeeChart.dll library, Steema Software firms.

The ParticleOnCircle program is assembly (assembly) of the program modules written in the C# language of version 6.0 in the environment of MS Visual Studio 2015.

The following modules are a part of assembly

1. Main module of the ParticleOnCircle.cs project.

2. Modules of the main form of the ParticleOnCircleForm.cs and ParticleOnCircleForm.Designer.cs project.

3. Modules of a form of a conclusion of messages on exclusive situations of ErrorMsgForm.cs and ErrorMsgForm.Designer.cs

4. Modules of a form of a conclusion of the reference helpForm.cs and helpForm.Designer.cs.

5. The module with the description of a class for work with 3-dimensional graphics of dllOpenGL.cs.

6. Modules with the description of the interface and classes of integrators IIntegrator.cs, TIntegrator.cs, DoPri5.cs, LWDoPri5.cs, RK4.cs.

7. Modules with the description of the interface and a class of the mechanical system IMechSystem.cs, Integrators.MechSystems.cs.

**Scope**

The ParticleOnCircle program can be used by way of illustration to mechanics courses. Besides the code of the appendix allows to use it as an example when studying object-oriented programming and work with 3-dimensional graphics.

**1. Restriction** is that the user can use the NetInfo application only in OS Windows® with the established platform .NET®. The platform .NET® is present at any OS Windows®, since OS Windows Vista® and, at observance of some simple requirements, can be established on the previous OS Windows® versions.

**2. The used technical tool**

During creation of the ParticleOnCircle program the Visual Studio 2015 programming environment of Microsoft® firm, the compiler from the C#6.0 language was used.

**3. The only special condition and the requirement of organizational, technical and technological character is existence on the environment computer .NET® (it is guaranteed it is observed, since OS Windows Vista®)**

**4. Conditions of transfer of documentation or its sale**

Concerning transfer or sale of the ParticleOnCircle program to address to the Southern federal university.

Address: Russia, 344006, Rostov-on-Don, Bolshaya Sadovaya St., 105/42
Ph.: +7 (863) 2633158 Fax: +7 (863) 2638723
E-mail: rectorat@mis.sfedu.ru URL: http://www.sfedu.ru

## ADVERTISING AND TECHNICAL DESCRIPTION "3DMechanics. A particle in the uniform field"

*FGAOU IN "THE SOUTHERN FEDERAL UNIVERSITY"*
*Fomin G.V.*

***UDC** 378*
***GRNTI** 14.35.07, 29.19.03, 29.29.49, 29.19.04, 29.19.15*

**Functional purpose of the program modeling the movement in the uniform field, a scope, restrictions**

**The ParticleInUniformField program modeling the movement in the uniform field** represents a complex of program modules which provide numerical simulation in real time of a task about the movement of a classical particle in the uniform field limited to a potential wall. The program is supplied with the graphic interface allowing to display the movement in various projections of space of coordinates – time – an impulse – energy, setting any entry conditions of the movement. The program is intended for use as an interactive illustration to courses of mechanics of the higher school. The program code written on C# can be used in grants on programming when studying object-oriented programming and library of 3-dimensional graphics.

***The ParticleInUniformField program has the following functionality:***

The appendix feigns in real time in various projections of space – time – an impulse - energy structure of solutions of a task on the movement in the uniform field limited to a potential wall depending on entry conditions of the movement. For this purpose

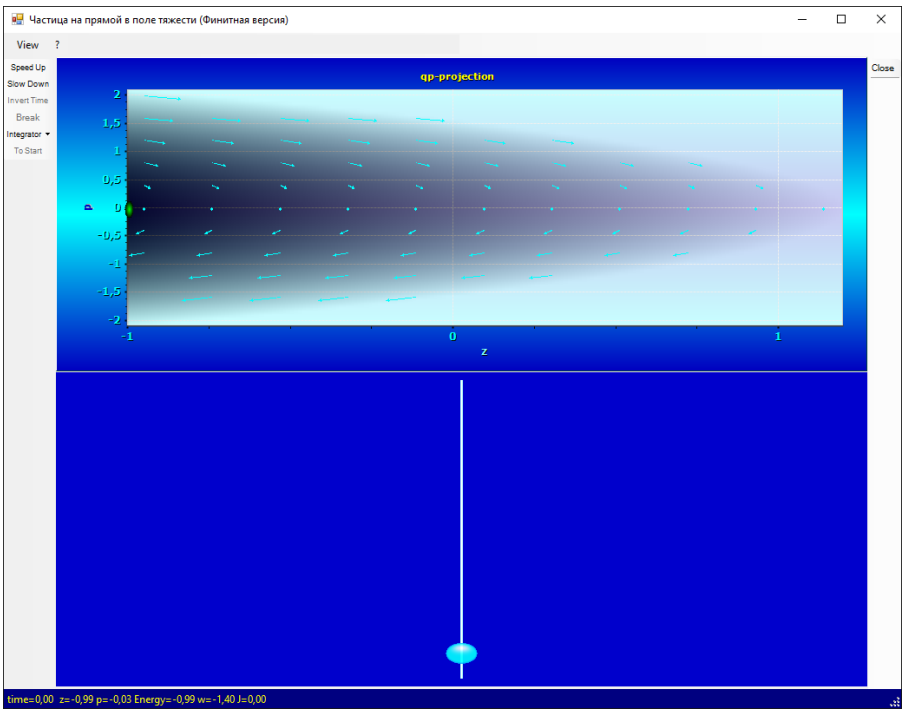
3. At the choice of entry conditions and in the course of the movement the structure of space *of tqpE* (time – coordinate – an impulse - energy) solutions of the equations of the movement of a particle in the uniform field limited to a potential wall in various projections is reproduced:
    a. qp and qE planes;
    b. development in time *of q(t)*, *p(t)*, *E(t)*;
    c. 3-dimensional projection *of qpE*;
    d. directly observed movement (real world);
    e. 3-dimensional projection to expanded phase space in *twJ* coordinates time-corner-action (existential Torahs *of tw*).

Each entry condition answers a separate *phase trajectory* in *tqp* space. Phase trajectories form the surfaces corresponding *to conservation laws*, or *movement integrals*. In other words, *conservation laws stratify phase space of mechanical system on subspaces of smaller dimension, and phase trajectories – on dimension subspaces unit*. At the choice of entry conditions in projections *of qp*, *qE*, *QPE* and *twJ* the current surface and the current phase trajectory on which the system will move is displayed.

4. Movement process in real time for the chosen entry conditions is modelled.

**Structure of an application window**

7. The window consists from 4-ekh boundary panels and one central panel.
8. On the top panel the menu is located.
9. On the right panel there is a button of switching off of the Close appendix.
10. On the lower panel elements of a so-called line of the status settle down. In panels of a line of the status the current cursor positions of a mouse are commented, and numerical information on entry conditions and the course of the account at the movement of system is given.
11. On the left panel the buttons operating the modes of the account, display and the choice of a method of integration of the equations of the movement are located (details are given below).
12. The central panel consists of the top and lower panels. Any of the listed above projections of space of tqpE can be brought to any of them (View menu). Any of two panels can be stretched on all central panel by the Full Screen team of a context menu (the right button of a mouse).



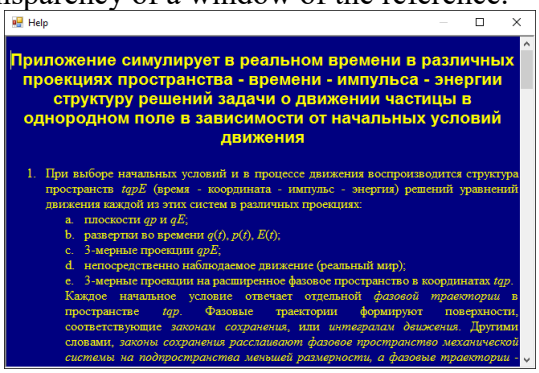

General view of an initial condition of an application window

**Menu**

- *The View menu* allows to choose the projection which is displayed on top (Top Panel) and the lower (Bottom Panel) panel of the central region of a window.

***By default at activation of the appendix***

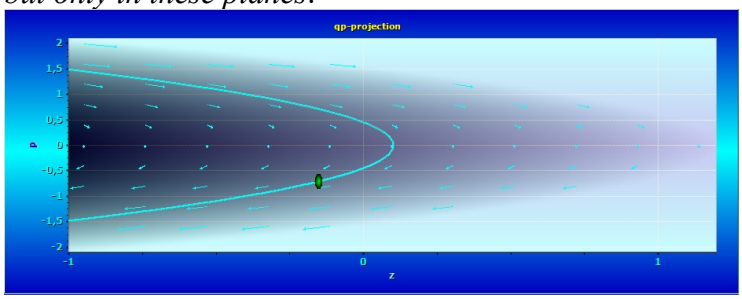
- on the top panel the plane the coordinate impulse (the QP-projection team of the View menu) is placed
- on the lower panel – the plane of the observed world (the Real World team of the View menu)
- *The menu "?"* causes a reference window. The toddler in a window of the reference allows to regulate transparency of a window of the reference.



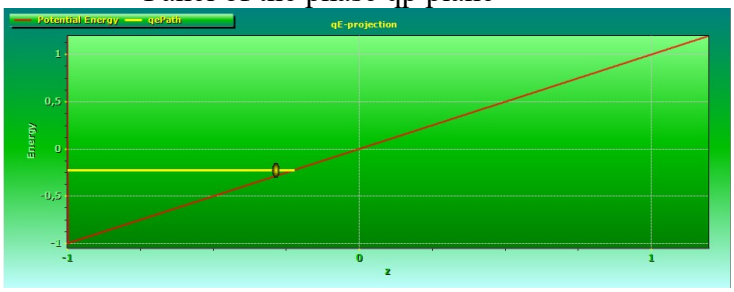

Reference window

*Task of entry conditions of the movement*

- Entry conditions of the movement are set by click on one of available points in any of the qE or qp planes, *but only in these planes*.

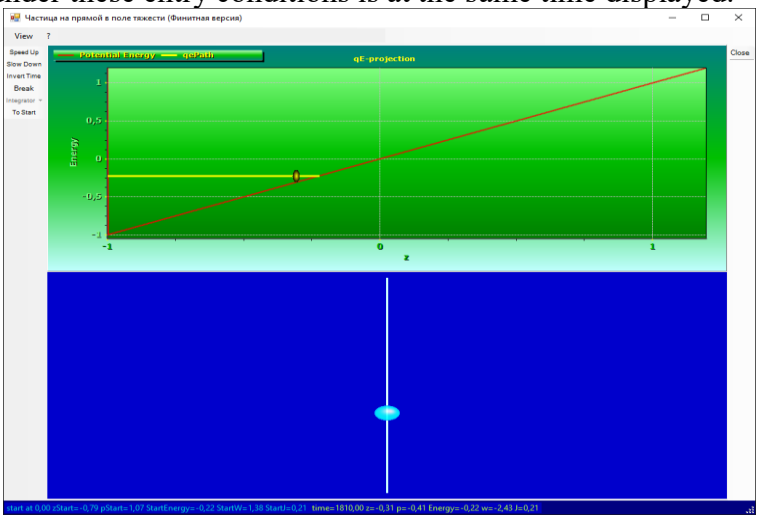


Panel of the phase qp plane




Panel of the qE plane (coordinate energy)

- Points in which the cursor takes the hand form are available to the choice of an initial state.
- In a line of the status numerical values of a point over which there is a mouse cursor, in terms of a task are displayed. The mass of a particle is taken for unit of mass, any sizes in which intensity of the field is equal to unit are accepted to units of distance and time. The potential barrier is located at the beginning of coordinates.
- The movement of the cursor at the choice of an initial state on one of the qE or qp panels is followed by a point sprite. This movement is synchronously reflected in the image of other panel which is on the screen at this time (if the state exists). The phase trajectory on which the system will move under these entry conditions is at the same time displayed.




Application window at the choice of entry conditions in qE projection.
On the lower panel the particle (real world) is represented.
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Other projections of space *of tqpE* of system can be shown in the top and/or lower part of the central panel of the screen by the choice of the corresponding teams from the View menu.

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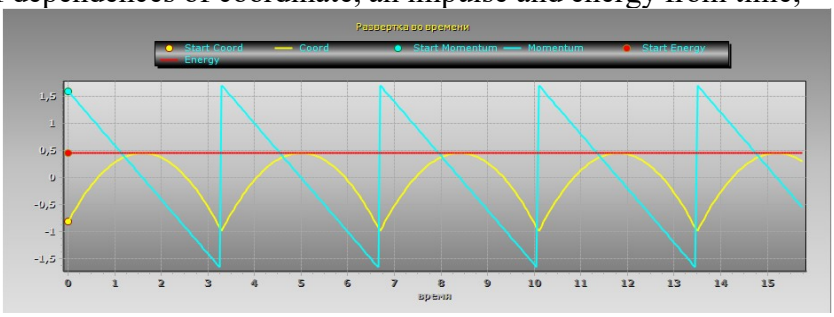
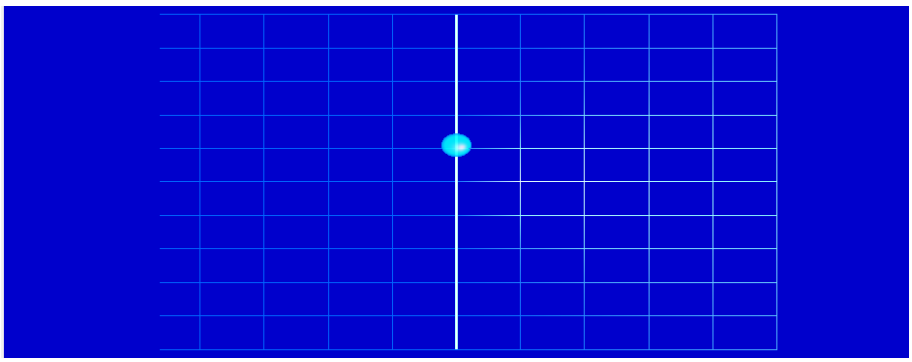


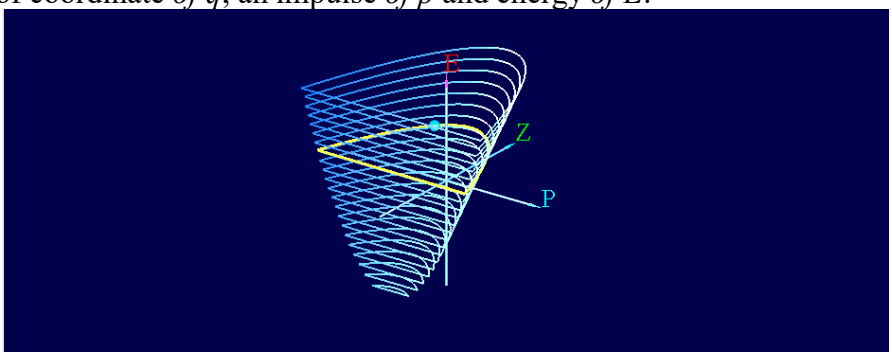

Action of the team Q(t), p(t), E(t) - chart

- the Real World team gives the three-dimensional image of moving model in an observed look;



Real world panel

- the QPE-projection team represents a 3-dimensional projection of the solution of a task on the movement to *qpE* space. Axes of space *of qpE* are dekaAdvertising and technical descriptionvy axes of coordinate *of q*, an impulse *of p* and energy *of E*.




Projection *of qpE* (coordinate-impulse-energy)

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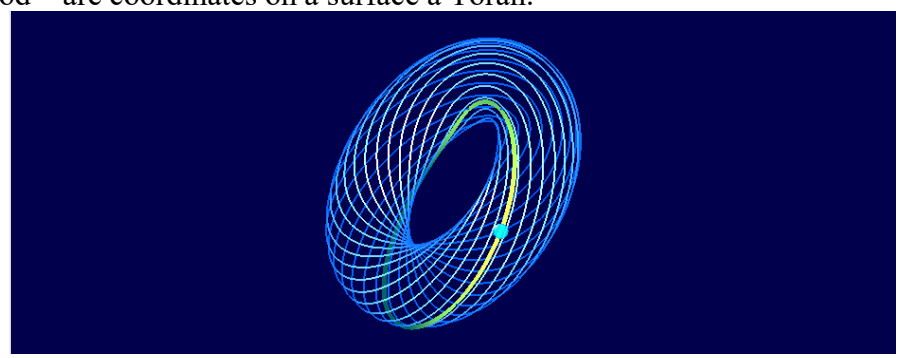

twJ projection (time – a phase – action)

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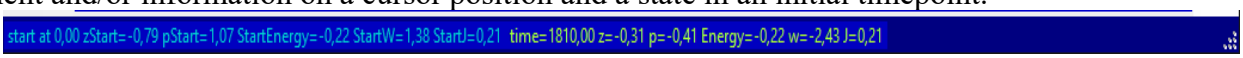
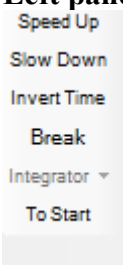



**Left panel**

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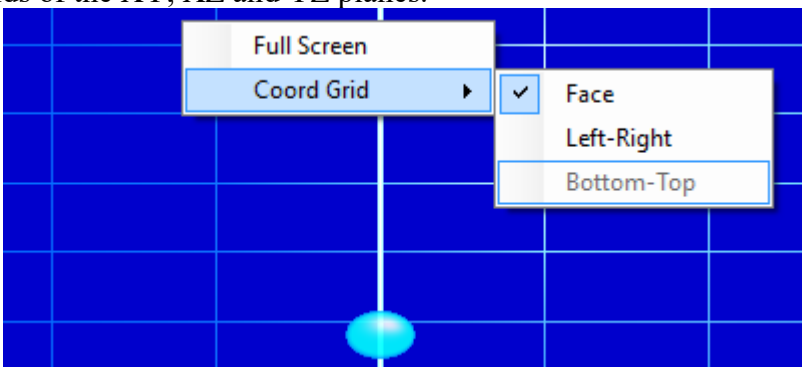


Context menu

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The following modules are a part of assembly

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The ParticleInUniformField program can be used by way of illustration to mechanics courses. Besides, the code of the appendix allows to use it as an example when studying object-oriented programming and work with 3-dimensional graphics.

**1. Restriction** is that the user can use the NetInfo application only in OS Windows® with the established platform .NET®. The platform .NET® is present at any OS Windows®, since OS Windows Vista® and, at observance of some simple requirements, can be established on the previous OS Windows® versions.

**2. The used technical tool**

During creation of the ParticleInUniformField program the Visual Studio 2015 programming environment of Microsoft® firm, the compiler from the C#6.0 language was used.

**3. The only special condition and the requirement of organizational, technical and technological character is existence on the environment computer .NET® (it is guaranteed it is observed, since OS Windows Vista®)**

**4. Conditions of transfer of documentation or its sale**

Concerning transfer or sale of the ParticleInUniformField program to address to the Southern federal university.

Address: Russia, 344006, Rostov-on-Don, Bolshaya Sadovaya St., 105/42
Ph.: +7 (863) 2633158 Fax: +7 (863) 2638723
E-mail: rectorat@mis.sfedu.ru URL: http://www.sfedu.ru

## ADVERTISING AND TECHNICAL DESCRIPTION "Library of Programs "Processing of AVL-trees"

*FGOBOU WAUGH "Omsk state technical university"*
*Sergeev M.I., YAnishevskaya A.G.*

***UDC** 025.4.03*
***GRNTI** 20.23.19, 20.23.17*

### 1. Functional purpose of a product

This software product represents the library written in the Python3 programming language, realizing interaction with a kind of binary trees of search which is called AVL-trees.

Mission of this development is creation of a set of functions which allow to carry out all necessary operations with binary trees of search taking into account features of AVL-trees.

This library is capable to carry out the following operations:

- Generation of a casual tree,
- Search of an element in a tree on a key,
- Check of a tree on balance,
- Check of lack of circular dependences in a tree,
- Balancing of a tree,
- Addition of new knots in a tree,
- Removal of knots from a tree

This library can be used for expansion functionality of any existing software product having a possibility of connection of third-party modules and is urged to simplify realization of functionality on work with AVL-trees. This library can be useful during the work with binary trees of search and performance of operations on them.

### 2. The used technical means

This library is written in the Python3 c programming language by use of IDE PyCharm.

The library is written with observance of the principles of OOP and consists from 2kh classes which are responsible for work with single knot of a tree and all tree.

### 3. Requirements for use of a product

This development is cross-platform and can be used on the following operating systems:

- Windows (7, 8, 10),
- OS X (Snow Leopard and newer),
- GNU Linux,
- BSD (FreeBSD).

For use of this library in system the compiler of the Python3 language has to be installed and access to funds of standard library Python has to be provided.

Also the system has to have support Cyrillic Unicode of symbols.

The system has to conform to the following minimum requirements:

- The Intel or AMD processor with a clock frequency not lower than 800 Mhz
- Random access memory of 512 MB
- 200 kb of free disk space

This library has no graphic interface and a conclusion of results of work is carried out in the console. In need of graphical representation of results of work the library has to be expanded independently.

**4. Conditions of transfer of documentation**

This software product is distributed under the license MIT.

This software is provided "as is", without any guarantees which are obviously expressed or meant including guarantees of commodity suitability, compliance on its concrete appointment and lack of violations, but without being limited to them. In any case authors or owners do not bear responsibility in any claims, for damage or according to other requirements, including, at operation of the contract, the delict or other situation, arisen because of use of the software or other actions with the software.

**List of references**

1) Adelson-Velsky, G. M. Odin algorithm of the organization of information / G. M. Adelson-Velsky, E. M. Landis//Reports of Academy of Sciences of the USSR. –1962. – T. 146, No. 2. – Page 263-266.

2) AVL tree [Electronic resource]//Free encyclopedia Wikipedia – Access mode: https://en.wikipedia.org/wiki/AVL_tree

## ADVERTISING AND TECHNICAL DESCRIPTION "Graphic Photofilter Program"

*FGOBOU WAUGH "Omsk state technical university"*
*Rybakova A.YU., ZHarkih A.A.*

***UDC** 002.6*
***GRNTI** 20.15.05*

**1. Functional purpose of the program, scope, its restrictions**

Graphics often should be processed by means of filters. Processing of the image allows to improve color tone, to adjust brightness, contrast and fixing of the image from the webcam.

The developed software is intended for processing of images by graphic filters. The program allows to process images by means of graphic filters by replacement of values of brightness of each element with average value, it is also possible to change color scale.

The program can be applied to preliminary processing of the images received as by means of input of the image from the disk file, and by means of the webcam other.

The developed program provides:

- input of an initial graphic representation from the disk file;
- visualization of an initial graphic representation;
- processing of images by means of filters: black-and-white, mono, negative, pencil;
- processing of images by means of functions: brightness, contrast and color palette;
- capture of the image from the webcam;
- change of the image due to symmetry;
- an opportunity to rotate the image clockwise or against an hour hand;

- possibility of listing of the image by means of the printer;
- record of results of work in the disk file.

The program has the following restrictions:

- The volume of the processed data and speed of processing is defined by opportunities of the used computer.
- It is necessary to consider that when processing images filters, it is impossible to change contrast and color palettes.

The program is the finished, independent software product and is intended for use as the program of preliminary processing. At the request of the customer the program can be executed in the form of separate function and can be delivered in the form of library for use as a part of software products of third-party developers.

If necessary the program can be added with other graphic filters. The program extends on matrixes of the CD-R with a capacity of 650 MB.

**2. The used technical means**

The software works under control of a multitask operating system with the graphic Windows XP/7 interface or another programmatically a compatible operating system. The personal computer with the installed operating system with support of Net Framework not lower than 3.5 is necessary for work of the program. The printer supporting functions of the press of graphics is necessary for listing of result of work. Also capture of the image from the webcam requires the external device of a chamber.

The computer has to be equipped with means of input of graphics. It can be the external input equipment allowing to transfer large volumes of information, for example the device of reading optical disks, or devices of direct input of images – the scanner, the digital camera and so forth.

It is recommended to use the uninterruptible power supply unit during the work. The program on a disk occupies 1024 Kb.

**3. Special conditions of application and requirement of organizational, technical and technological character**

Work of the program does not require additional software. Work with the program does not demand special preparation. The user needs to be able to work with the interface of the Windows operating system surely. The program has intuitively clear interface. Additional training of users in work with the program is not required.

When using graphic input devices the user has to work with scanners surely. In the absence of such skills additional training of users in rules of work with scanners is necessary.

Also when using graphic input devices it is necessary to carry out regular prevention of optical elements on which condition quality of the entered image directly depends.

**4. Conditions of transfer of program documentation or its sale**

All information on the program, including mathematical part and the description of calculation procedures, can be received at the author by agreement. Documentation is transferred in printed form and on magnetic carriers.

If necessary completion and modernization of the program is possible.

**Bibliography**

1. Potapov, V. I. Protection and protection of products of intellectual activity: monograph / V. I. Potapov. – Omsk: Publishing house of OMGTU, 2014. – 140 pages.

# ADVERTISING AND TECHNICAL DESCRIPTION "Algorithm of Information Expert System for a Quality Assessment the ZIP"

*FGAOOU WAUGH "St. Petersburg State University of space instrument making"*
*Gur'yanov A.V., Fetisov V.A., Majorov N.N.*

***UDC 681.51***
***GRNTI 73.01.76, 73.01.88, 73.01.93***

## 1. Functional purpose of a product, scope, its restrictions

Ensuring high level of readiness of park of vehicles due to reduction of time of their compelled idle times is the main objective of technical service of providing. Idle times of vehicles can be caused by performance of the planned maintenance (M), not planned THAT (elimination of malfunctions), and also to be a consequence of lack of spare parts, necessary for performance of work. One of conditions of ensuring the set level of readiness of products for vehicles is maintenance of optimum volume of revolving fund of spare parts. Development of special information expert system is necessary for the solution of objectives. Such expert system demands development of specialized algorithm. It should be noted that depending on a type of transport, the algorithm will be added by new blocks.

The algorithm of expert system by an assessment both reliability of elements, and supports of decision-making on formation of a set the ZIP includes the analysis of various chains of deliveries.

According to basic subject domain the expert system has to realize the following opportunities:

1. The uniform database for information as according to the nomenclature the ZIP, and to results of decision-making;
2. The block of the analysis of optimum party of delivery, on condition of carrying out experiment in various schemes of delivery;
3. The interface for work with Asonik's system (ASONIKA - the automated system of ensuring reliability and quality of the equipment);
4. The organization of multilevel hierarchical network access to the program with differentiation of the rights for the persons making the decision on a complete set the ZIP (experts);
5. The electronic reference book on standards, methodical information, state standard specifications according to formation the ZIP;
6. Information on rules and conditions of repair of objects ZIP; 7.

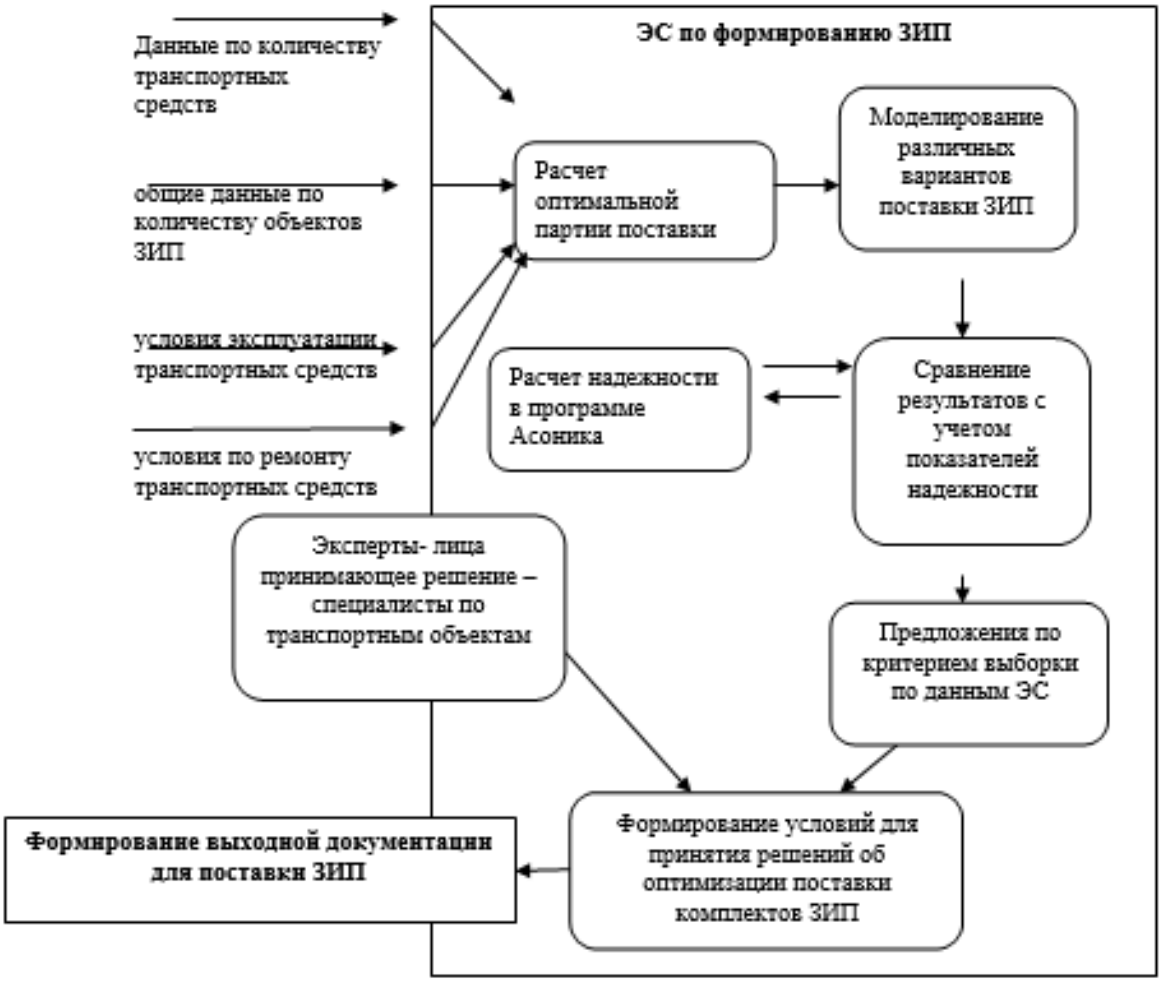
Possibility of the organization uniform information spaces for an exchange of offers among experts.

Feature of expert system is that it does not include program modules similar to Asonik's program. The algorithm does not turn on settlement modules of the analysis of reliability of elements.

**Offers on criterion of selection according to expert system.**

The expert system contains in itself the module of calculation and an assessment of optimum party of delivery. At the same time under it there is a modeling and various schedules of formation of deliveries the ZIP are under construction.

The algorithm of work of information expert system looks as follows (fig. 1):




Rice 1. Algorithm of work of expert system

For the organization of work of users (experts) both the file - server technology, and client-server technology can be used. Modules of expert system are given on rice 2.

Rice 2. Modules of expert system

Calculation or an assessment the ZIP is carried out for any of four ways of replenishment of the spare parts (SP) – periodic, periodic with the emergency deliveries, continuous, on level. The way of replenishment of ZCh and parameters of replenishment can be identical to all ZCh or different for different ZCh.

Calculation the ZIP is carried out on any of five methods of calculation – simplified taking into account expenses with optimization, taking into account expenses without optimization, without expenses with optimization, without expenses without optimization. For methods with optimization one of types of optimization – with the required sufficiency the ZIP (not less) or with the required cost the ZIP can be set (no more). During the calculating or an assessment the ZIP is considered and any of three known indicators of sufficiency the ZIP – an availability quotient, average time of a delay, probability of sufficiency, and also cost the ZIP is calculated. When calculating data on refusals of ZCh at their storage can be considered.

For expert system for calculation (or estimates) the ZIP it is necessary to prepare initial data which sources and the nomenclature are stated below:

1. from design documentation of a complex – the nomenclature and quantity in a complex;
2. from requirements of TZ of development of a complex – a type of a set the ZIP, a way (ways) of replenishment of spare parts and parameters of replenishment; type of an indicator of sufficiency of a set ZIP; when calculating the required value of an indicator of sufficiency (or the required value of cost the ZIP) is also necessary, and at an assessment – quantity in the ZIP of each ZCh;
3. from contractual documentation for a complex – a type of expenses (for example, cost) and the size of costs of each module of delivery of the vehicle;
4. from results of calculation of reliability (Asonik's complex) – failure rate at operation;
5. from results of calculation of reliability – failure rate at storage.
6. Data on expenses are necessary if it is necessary to consider when calculating (or an assessment) the ZIP of costs of the ZIP.

If any necessary for calculation (or estimates) initial data are absent, it is necessary to create the interface on input of notes to calculation (these data in coordination with the head of development).

Any transport company, the design company, design office of the most various scale, and of course the enterprises making sets the ZIP can become a scope of expert system.

**2. The used technical means**

Work of server part of information expert system requires the computer which has to have the following parameters:

1. The processor with a clock frequency not less than 1800 MHz.
2. Not less than 1024 MB of the RAM.
3. Existence of 500 MB of an empty seat on a disk.
4. OS: Windows XP above, MAC OS X 10.6 above.
5. The monitor with the resolution not less than 800*600 points.
6. Existence at least one of the following browsers: Internet Explorer, Firefox, Chrome, Safari, Opera with the included support of JavaScript.

**3. Special conditions and requirements of organizational, technical and technological character**

The organization of network work requires existence of the local computer network with the differentiated access rights.

**4. Conditions of transfer of documentation or its sale**

Transfer of documentation is possible only with the permission of developers of information expert system for a quality assessment the ZIP.

# ADVERTISING AND TECHNICAL DESCRIPTION "The Educational and Demonstration Program Module by Definition of the Shortest Route in Bulevoznachny Networks"

*FGBOOU WAUGH "Omsk state technical university"*
*SHCHerba E.V., Litvinov G.A.*

***UDC** 378*
***GRNTI** 14.35.07, 27.45.17, 27.03.19, 28.21.27, 49.33.35*

**1. Functional purpose of the program, scope, its restrictions**

The bulevoznachny network is understood as the focused multigraph to which each arch some element (tag) from the fixed final Boolean algebra is attributed. For example, let the great number *of M = { by a1, a2, a3* is set*, a4 }*, a set *of P(M)* – a set of all subsets of a set *of M*, is set Boolean algebra (*P(M)*, ∧, ∨¬). The example of a bulevoznachny network for the set Boolean algebra, is presented in fig. 1.

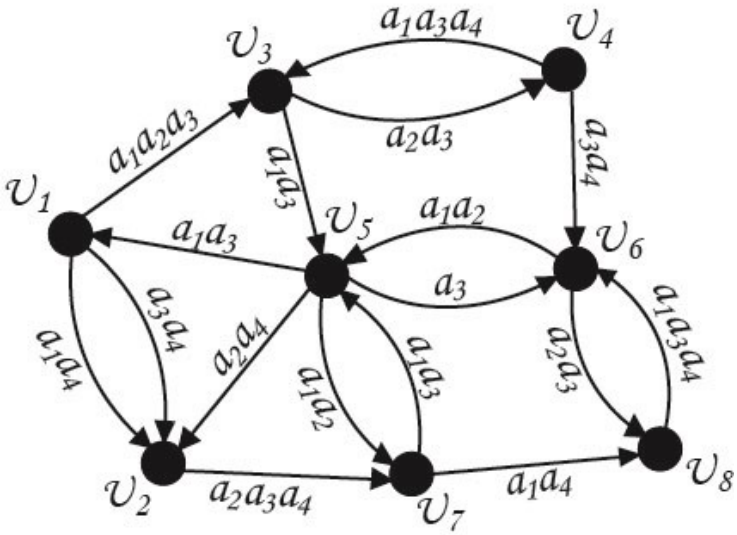



Figure 1. Example of a bulevoznachny network

The shortest route between the set pair of tops in a bulevoznachny network is understood as the route possessing the minimum variety of atoms of Boolean algebra for set of tags of all arches forming this route. The developed educational and demonstration program module allows to define the shortest route between the set pair of tops in the set bulevoznachny network.

The task of a bulevoznachny network, and also initial and final point of a required route is made in the entrance newin.txtfile. In the first line of the file, using a symbol divider ";", the amount of atoms of Boolean algebra, number of initial top of a route and number of final top of a route are specified. In the second line of the file it is necessary to set a bulevoznachny network by means of the corresponding list (for example "u1, u2, a1a2, u4, a2a3-…"). In this list all proceeding arches from each top have to be specified. Each element of the list represents pair of tops – the beginning and the end of an arch, and also value of a tag for the arch connecting the specified pair of tops. As the network is a multigraph, between two knots there can be more than one arch. In this case value of a tag for each arch connecting the set pair of tops separates a symbol ",". Transition to new top in the list is carried out by means of a symbol "-".

```
4; 1; 6;
u1,u2,a1a4,a3a4,u3,a1a2a3-u2,u7,a2a3a4-u3,u4,a2a3,u5,a1a3-u4,u3,a1a3a4,u6,a3a4-
u5,u1,a1a3,u2,a2a4,u6,a3,u7,a1a3-u6,u5,a1a2,u8,a2a3-u7,u5,a1a2,u8,a1a4-u8,u6,a1a3a4
```

Figure 2. Entrance newin.txt file

The example of the entrance file corresponding to a problem of definition of the shortest route from *v1* top to *v6* top in an initial bulevoznachny network (fig. 1) is presented in fig. 2.

The program module makes a conclusion of some intermediate calculations in an open dialog box. A conclusion of all shortest routes, with the indication of a variety of atoms of Boolean algebra, is made in the result.txtfile.

The program module has two operating modes:

– search of the shortest route to a certain top;
– search of the shortest route to all available tops.

For realization of the program module of definition of the shortest route between the set pair of tops in the set bulevoznachny network the high-level Python programming language was chosen. The developed program module is cross-platform that is also confirmed with results of its testing.

**2. The used technical means**

The following equipment rooms and software are necessary for functioning of the program module for search of the shortest route between the set pair of tops in the set bulevoznachny network on the computer of the user:

1. ° C: Windows 2000/XP/2003/7/8/10.
2. COMPUTER type: IBM PC-sovmest. Personal computer.
3. Frequency of the processor is not lower than 1 GHz.
4. Random access memory of 512 MB.
5. Existence not less than 10 MB of an empty seat on a disk.

**3. Special conditions of application and requirement of organizational, technical and technological character**

Conditions of application have to conform to the modern requirements imposed to operation of the software. The program demands existence of the installed program compiler Python 2.7 and can be started from any carrier.

**4. Conditions of transfer and sale of program documentation**

The program module for search of the shortest route between the set pair of tops in the set bulevoznachny network and documentation to it can be transferred to the interested person or the organization on the basis of the contract with OMGTU and authors according to the current legislation.

**Bibliography**

1. Saly, V. N. Optimization in bulevoznachny networks / V. N. Saly//Discrete mathematics. – 2005. – T. 17. – No. 1. – C. 141 – 146.
2. Shcherba E.V. Boolean-valued models of telecommunication systems in some problems of network security//In Proceedings of the 2015 International Siberian Conference on Control and Communications (SIBCON). 2015.

## ADVERTISING AND TECHNICAL DESCRIPTION "Algorithm" the automated analysis of structure of carriage park"

*FGBOOU WAUGH "The Siberian state transport university"*
*Gunbin A.A.*

***UDC*** *656.21, 656.212.5*
***GRNTI*** *73.29.21, 73.29.61, 73.29.17, 73.29.81*

**1. Functional purpose of the program, area of its application, its restriction**

**Purpose of the program**. At evaluation of the work of elements of infrastructure of the railroads often there is a need for specification of local service conditions taking into account climatic conditions, features of operation and technological processes.

Definition of structure poyezdo-or the traffic volumes following through the studied element of station costs a single question.

It is necessary to make the large-scale analysis of classifying sections and telegrams of natural leaves of the structures arriving to station for receiving statistically steady results. As a result of processing the general data on the mass of a container, mass of freight and the number of cars, the following on one way are obtained when sorting. Also in connection with emergence of private park there is a problem when determining like a rolling stock in the standard way according to eight-digit number. For obtaining more detailed information on distribution of mass of a container and type of the car it is necessary to use the SIRIUS, DISPARK commercial systems or databases of the Internet. But such type of interaction does not assume process automation.

This software product is intended for the automated selection of carriage park as cars, definition of their characteristics and the analysis of structure of carriage park. It can be used at the solution of the following tasks:

– assessment of passing of an ottsepama of perevalny part of a hill;

More exact characteristics of single ottsep influence definition of a point of a separation, allow to estimate probability of safe passing of a hump of a hump yard. Compliances of a hump of a hump yard in a profile to standard values.

– an assessment of probability of a samorastsep when passing by hill hump cars;

Information on length of base of the car and distance between axes of automatic couplings allows to define probability of a samorastsep of cars. This violation can lead as to violation of technology of operation of the sorting device, and to damage of a rolling stock.

– analysis of structure of long ottsep;

At determination of features of operation of the sorting device the great value is played by structure of long ottsep. Distribution of weight and type of the car in an ottsep strongly influences its running characteristics, finding of a point of a separation, application of the modes of braking.

– calculation of height of a hump yard

In the analysis of sorting leaves the software product allows to define more precisely type of the car and mass of a container that increases a correctness of calculation of height of a hump yard. By specification of the main specific resistance and resistance to the movement of cars from influence of the air environment and wind.

### 1.2. Structure and functioning of the program

The algorithm "The automated analysis of structure of carriage park" consists of three modules:

– the main module of data processing about carriage park (see figure 1) intended for loading of basic data about carriage park, formations from them of the massif for processing by the scenario Bash, final processing of the obtained data, drawing up distribution of Pareto, preservation of the received results in the file of the Microsoft Excel program;

– *the scenario of a command cover Bash* intended for formation of inquiry on the car in online the database;

*the auxiliary module of processing of the obtained data on the set criteria* (see figure 2), the carriage park intended for obtaining statistical data on distribution as the car, model, the mass of a container, loading capacity, car length on axes of automatic couplings.

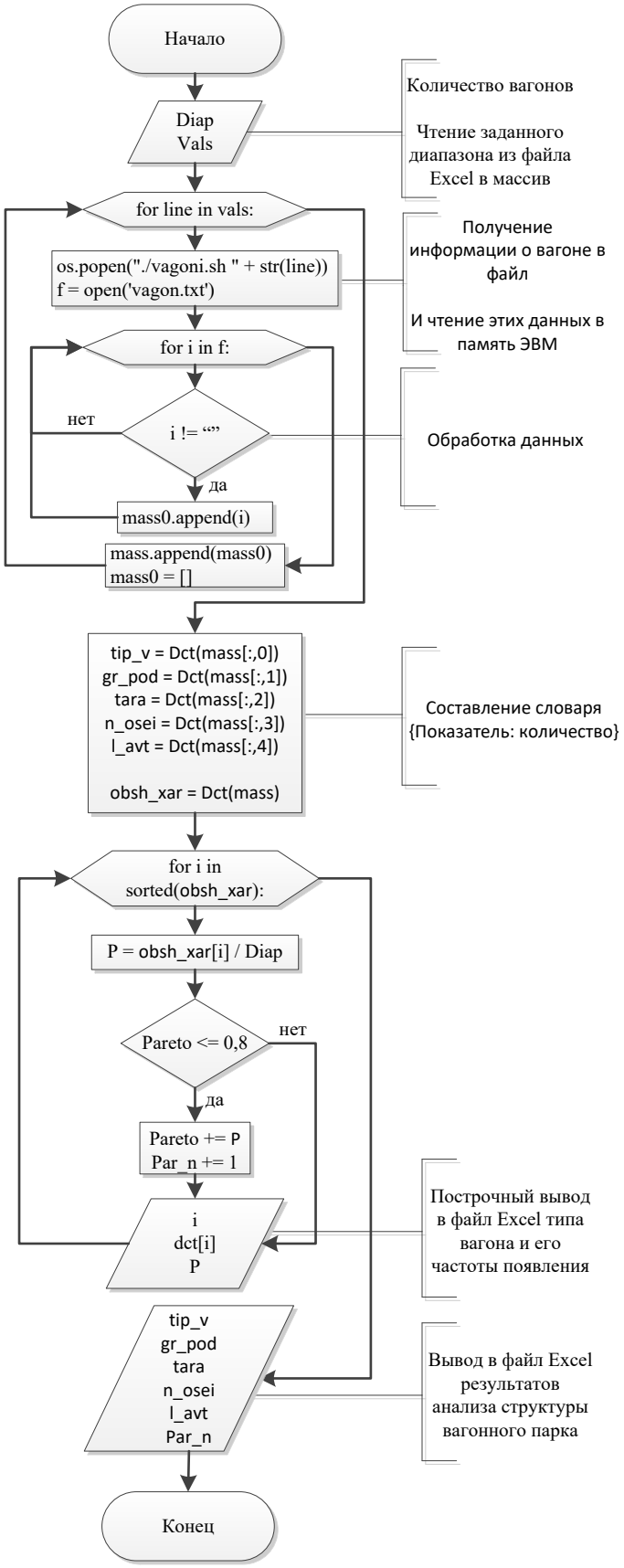



Fig. 1. Flowchart of algorithm of the main module of the "Automated Analysis of Structure of Carriage Park" program

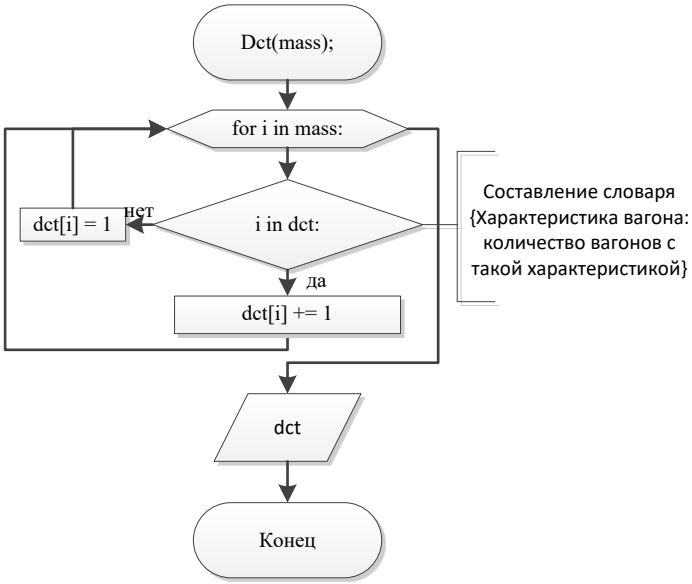



Fig. 2. Flowchart of algorithm of the auxiliary module of data processing of the "Automated Analysis of Structure of Carriage Park" program

At the beginning of work of the program the user needs to specify the name of the file of the Microsoft Excel program which contains numbers of cars of the studied carriage park and to enter data on the number of cars. Information has to be provided in a form of a column of values where each cell of the table contains individual number of the car.

In the main module of the program this table will be transformed to data array of vals and is postrochno processed *by the scenario of a command cover Bash.* As a result of work of the scenario the mass array containing information on number of the car, car type, brand of the car, mass of a container, loading capacity and length of the car on axes of automatic couplings turns out. On the frequency of occurrence of types of cars Pareto's distribution is formed. Results of the analysis remain in the Microsoft Excel file.

The auxiliary Dct module on the basis of the mass array makes the dictionary in a form:

[criterion: the number of cars with this characteristic].

**1.3. Program scope**

The specialized not dynamic system of collecting and assessment of data intended for deeper statistical analysis of carriage park in the set parameters by production scientific, hozdogovorny and studies.

The main scope of the program – an assessment of structure of a traffic volume, for specification of calculations of hump sorting devices.

Also results of work of algorithm can be used at an assessment of quality of work of elements of railway infrastructure.

**1.4. Restrictions of use of the program**

The "Automated Analysis of Structure of Carriage Park" program allows to define type and structure of carriage park only at input of the correct numbers of cars, excepting not the working traction rolling stock (locomotives, section cars, puteysky cars) going in the train.

For obtaining the statistical data and characteristics of carriage park which are not provided by algorithm, the program will demand adaptation and change of the scenario of a command cover of Bash.

**2. The used technical means**

2.1. The applied software

The main algorithm of the "Automated Analysis of Structure of Carriage Park" program is realized in the Linux operating system with use of the Python 3.2 programming environment.

Interaction with the Internet is executed by means of the scenario of a command cover Bash, with use of the console text w3m browser.

2.2. Hardware requirements

Algorithm "The automated analysis of structure of carriage park" it is intended for use in local option on personal IBM PC computers. An operating system – Linux and compatible to them.

*Minimum system requirements:*

the processor with a clock frequency of 800 MHz;
random access memory of 512 MB;
free space on the hard drive of 100 MB;
mouse manipulator;
standard keyboard;
the video card with support of permission 800*600;
access to the global Internet network;
color monitor.

*The recommended system requirements:*

the processor with a clock frequency of 2000 MHz and above;
random access memory of 1024 MB and above;
free space on the hard drive from 100 MB;
mouse manipulator;
standard keyboard;
the video card with support of permission 1280*1024 and above;
access to the global Internet network with a speed of 100 Mbps;
color monitor with a diagonal of 17" and more.

**3. Special conditions of application and requirement of organizational, technical and technological character**

Use of algorithm requires knowledge of the Python language at the initial level.

**4. Conditions of transfer of program documentation or its sale**

Program documentation extends on the basis of the special contract, according to the current legislation.

Concerning acquisition of the program it is necessary to address in FGBOU VPO "Siberian State Transport University" (SSTU).

Address: Russia, 630049, Novosibirsk, Dusya Kovalchuk St., 191.

Ph.: (383) 328-04-46

## ADVERTISING AND TECHNICAL DESCRIPTION "Equations of Mathematical Physics"

*Ministry of Education and Science of the Russian Federation*
*Kutuzov A.S.*

***UDC** 378*
***GRNTI** 14.35.07, 14.25.07, 27.31.17, 27.31.21, 27.31.33, 27.31.44*

**1. Functional purpose of development, scope, its restrictions**

The equations of mathematical physics (the short name PDESolver) – a program complex for finding of solutions of regional tasks for the differential equations in private derivatives (the equations of mathematical physics). It will be useful when carrying out fast engineering calculations, and also to students of physical and mathematical specialties.

Main features:

1. Input of any initial functions with a possibility of their further analysis and tabulation. Erase the entered text to understand that exactly to enter into the respective field. Long pressing

in the field of input displays a pop-up menu with the complete list of possible operations and functions.

2. Export of basic data to .txt files on the SD card. It is recommended at the first start of the program to execute export of all by default of the entered basic data and to get acquainted with an arrangement and structure of the received files.

3. Import of basic data from .txt of files on the SD card. Files of import have to contain numerical massifs of strictly certain dimension (quantities of lines and columns in these files are interconnected among themselves) (see point 2).

4. Saving the decision in the file on the SD card.

5. Graphic display of results with a possibility of any rounding (to 16 signs after a comma). Pressing on graphics displays the answer in a concrete point. Small scaling of schedules is supported.

6. Animation of the considered non-stationary processes. 3D - visualization of results.

7. Possibility of cancellation of long operations. Especially actually at a task of too large number of steps on a variable x.

At the moment well to about 50 models, among which:

1. The general linear and nonlinear regional tasks for the wave equation
2. The general linear and nonlinear regional tasks for the heat conductivity equation
3. Return problem of thermal diagnostics
4. Dirikhle's task for Poisson's equation on a rectangle and on sector
5. Dirikhle's task for Laplace's equation in a circle and in a ring

Notes:

1. Saving the numerical decision requires existence of the SD card. Also the SD card is necessary for visualization of results at a large number of steps on x.

2. In some tasks in order to avoid losses of stability it is necessary to watch correctness of signs of the entered equation coefficients not to receive physically uncertain, incorrect task.

3. To tasks on sector, in a ring and in a circle: files of import of data have to contain the values of functions received by tabulation in polar system of coordinates.

4. To the return problem of thermal diagnostics: the f(t) function has to aspire to zero at aspiration of t to infinity. The theoretical error of the decision is overestimated. Model examples can be built, using a direct task for the heat conductivity equation. At the same time it is desirable to carry out export of model functions.

This development is unique, analogs on Android in free access are not available.

The smartphone not less than from 512 MB of random access memory and support of the Android operating system of version 4.2 is necessary for comfortable work above.

The program is available to free downloading on the following link: https://play.google.com/store/apps/details?id=inc.horror.pdesolver

**2. The used program and technical means**

When developing the program complex "Equations of Mathematical Physics" (PDESolver) the free Android Studio 2.1.2 development environment was used.

**3. Special conditions of application and requirement of organizational and technological character**

It is not required.

**4. Conditions of transfer of documentation on development or its sales**

Distribution and use of the program complex "Equations of Mathematical Physics" can be carried out only with the consent of the author.

*FGBOOU WAUGH "Omsk state technical university"*
*Fedorov I.V.*

***UDC 621.31***
***GRNTI 44.29.29***

**1. Functional purpose of the program, scope, its restrictions**

The algorithm and the program allow to investigate economical and power model of the wholesale market of electric energy from the point of view of area of the admissible modes. Application - in the theoretical and practical works connected with research of entropy dynamics of sizes of the market of electric energy. During creation of algorithm the author's materials including used by it in educational process at Power institute of OMGTU were used. In addition, the resources which are available in free access on the Internet or free sale were used.

The set of the modes was considered, and on certain conditions their accessory AAM (area of the admissible modes) was estimated. The quantity of the modes corresponding to sufficient conditions that allows to judge the sizes was defined. BED. At the same time decomposition of an electric circuit was carried out, and for "trees" existence of the modes was determined by the conditions.

Results of calculations allow to claim that with complication (circularity) of the scheme of a network the importance of sufficient conditions increases. The analysis of the possible modes which are not diagnosed on sufficient conditions as existing, showed that those are the modes close to borders the BED.

It is necessary to pay attention to situation that at the accepted yi and xn+1 values positive diagonal elements of a matrix of A. Eto prevail causes nonnegativity of all bij elements of the return to it matrixes of Century. In accessory APM (area of the possible modes) not only the separate mode, but also their set concluded in a n-dimensional parallelepiped of pimin $\leq$ by pi $\leq$ pimax on a condition allows to estimate the specified property of a matrix:

$$-0{,}5 \leq \sum bij\ pimin \leq \sum bij\ pi \leq \sum bij\ pimax \leq 0{,}5. \quad (1)$$

For each knot of 27-nodal EES (electrical power system) ranges of possible not balances of active power were set, and check on a condition (1) showed accessory of the expected modes of area of existence of the modes in the full scheme that allows to speak about compliance of the scheme to requirements of electroconsumers.

At design and operation of EES often there is a problem of an assessment of existence of the mode in the scheme at shutdown of one or several elements of a network. The offered method allows to solve this problem, without carrying out all cycle of calculations of new matrixes And yes In, the demanding considerable costs of calculation.

At a rupture of communication between i-m and j-m in knots the system has a new matrix And yes the return to it Bij matrix = Aij-1. Let's designate through b(i) = (bi1,…, bin) i-yu a line of a matrix In, Δij=b(i) - b(j). Then on a lemma about the return matrix:

$$BIJ = IN + \Delta Bij,$$

$$\Delta Bij = \frac{q_{ij}}{1 + q_{ij}(-b_{ii} - b_{jj} + 2b_{ij}} \Delta_{ij}^{T} \Delta_{ij} \quad (2)$$

Thus, for an assessment of existence of the mode in the incomplete scheme it is enough to have a vector r and a matrix In and to specify what shutdown of communication happened. This situation allows to reveal influence of this or that communication on admissibility of the set not balance, i.e. to range communications and to estimate the size of a necessary resource of management of not balances in the set knots where there is such opportunity.

On the basis of the property of compressibility (on knots) consisting in compression of area of the admissible modes at reduction of the module of tension at least in one of knots sufficient conditions and criterion for evaluation of existence of the modes are received.

It is possible to receive sufficient living conditions of the mode in the EES conservative model of any configuration when stronger property - compressibility on communications where through qii we will designate the sum of capacities of all branches proceeding from a hub i is entered and analyzed.

In this case the model is defined by a matrix of communications of Q = (qij).

Set of the modes P = (P1..., Pn) for which the system of the equations of EES concerning corners δ1,…, δn is solvable, we will designate through P(Q). In the accepted idealization this area coincides about the BED.

From practice of real EES it is known that weakening of communications leads the BED to reduction. For two matrixes of communications of Q = (qij), with Q' = (q'ij) of one order we will write Q' ≤ to Q if q'ij ≤ qij for all i, j.

To similarly offered concept of "compressibility on knots" we will enter concept of "compressibility on communications". Let's tell that EES (or its area of existence of the modes (AEM) is squeezed on communications if for its matrix of communications of Q the condition is satisfied:

$$Q' \le Q \Rightarrow P(Q') \subset P(Q) \quad (3)$$

For the proof of justice of property (3) in three-nodal EES it is enough to consider, a case when $q'_{12} < q_{12}$, $q'_{13} = q_{13}$, $q'_{23} < q_{23}$.

Let: Q = (qij), F' = (q'ij) - the corresponding matrixes of communications and P - any mode from P (Q') to which phase corners δ1, δ2, δ3 answer. Let's consider two modes A and B from P(Q) to which sets of phase corners (δ1, δ2, δ3) and (π-δ1, π-δ2, π-δ3 answer) respectively. If δ1 <δ2, then the return inequalities are fair. In both cases not balance of P1 is concluded between not balances of A1 and B1. But the modes P, A, B lie on one straight line (as they are balanced and at them not balances answering to the third knot coincide). Therefore the mode P is located on the piece connecting the modes A and B. From other party, this piece entirely belongs to the P (Q) area (owing to its camber). Therefore, the mode P belongs to the P(Q) area, as proves the required inclusion in the right part of implication (3).

Being guided by the proof of compressibility on communications of three-nodal EES, only EES meeting a condition (3) are considered further. Let's note that its compressibility on knots follows from compressibility on communications of area of the admissible modes (as at reduction of the module of tension in some knot capacities of the branches proceeding from this knot decrease).

Let's show how property (3) allows to receive criteria of existence of the mode. For this purpose we will consider system of the equations

$$P_i = \sum_{j=1, j\neq i}^{n} q_{ij} f_{ij}(\delta_i - \delta_j) \quad (4)$$

i = 1., n;

where fij - some odd functions, and fij = fji. Let this system have the decision (δ1,…, δn) it that

0≤qij fij (δi-δj) ≤ qij sin(δi-δj), (5)

as soon as sin(δi-δj) ≥ 0. Believing:

q'ij = qij fij (δi-δj)/sin(δi-δj) if sin(δi-δj) ≠0 and q'ij=0 otherwise, we are easily convinced that by q'ij =q'ji, 0 ≤ q'ij ≤ qij and

$$P_i = \sum_{j=1}^{n} q'_{ij} \sin(\delta_i - \delta_j)$$

The last means that P∈P (Q') and owing to implication (5) P (Q')⊂P(Q). Thus, for EES squeezed on communications resolvability of initial system of the equations follows from existence of the decision of system of the equations (4) meeting conditions (5).

Choosing as various image of the fij function it is possible to receive various criteria of existence of the mode. Let's take as an example of fij(δ) = 2/π*δ. Justice of an inequality 0 ≤ fij(δ)/sin(δ) ≤ 1 follows from oddness of the last function and the fact that the sinusoid arch at = sinδ connecting points to coordinates (0,0) and (π/2,1) is located above a piece of a straight line of fij(δ) connecting the same points at | δ | ≤ π/2, δ ≠ 0. In particular, the set (δ1,…, δn) meets a condition (5) if:

qij≠0⇒| δi-δj | ≤ π/2

As a result of replacement of zi = 2/π*δi we have fij (δi-δj) = zi - zj and the last implication takes a form:

qij≠0⇒| zi-zj | ≤1 (6)

Thus, mode P = (P1..., Pn) exists if some decision of system of the linear equations:

$$Pi = \sum_{j=1}^{n} q_{ij}(z_i - z_j) \qquad (7)$$

meets a condition (6).

The system of the equations (7) usually meets at the simplified description of a potokoraspredeleniye by an idealization method on a direct current. In difference from this method sent first of all to a pas finding of an approximate potokoraspredeleniye at the assumption of a trifle of phase corners sufficient terms of resolvability of initial system the equation without finding of the decision are offered above, at the same time there is no need to impose restriction for the size of phase corners.

**Main objective** of algorithm search of the admissible balanced mode at which the linear overflow does not surpass its capacity in a separate branch.

By analogy with the size qij sin(δi-δj) where (δ1,…, δn) - the decision of initial system which represents an overflow of active power on a branch (i j), the size qij (zi-zj) where (z1,…, zn) - we will call the decision of system (7) a linear overflow on a branch (i, j), answering to the mode P, at the same time zi difference - zj we will call the given overflow and we will designate Kij (P).

It is rather obvious that for each balanced mode (i.e. the mode at which the sum a component from any isolated subset of the EES hubs is equal to zero) (given) overflows answering to it linear unambiguously are defined; for the connected EES the functionality of Kij can be calculated as follows. We turn a matrix And = (aij)) n order where aii =qjj and aij = - qij at i≠j, a matrix of A-1 is expanded in the zero line and a zero column (answering to number n+1) to a matrix In = ((bij)) of an order of n+1:

$$KIJ\ (R) = \sum_{k=1}^{n} (b_{ik} - b_{jk}) P_k$$

Let's consider the balanced mode P (l, m) at which not balance i-oho of knot is equal to zero at i = to l, m, it is equal to unit at i = to l and it is equal minus unit at i = to m. For any balanced mode P = (P1..., Pn) equality takes place:

$$P = \sum_{i<n} P_i P(i,n) .$$

The given overflow on a branch (i, j), answering to the mode P (l, m), we will call the provided coefficient; and to designate interferences through Kij (l, m) (we will agree to consider that Kij (m, m) = 0). This coefficient shows as far as not balance of active power of l-go of knot influences the given overflow on a branch stronger (i, j), than not balance of m-go of knot. Having multiplied Kij (l, m) on qij capacity, we will receive the similar size reflecting interference of not balances of hubs l and m on a linear overflow on a branch (i, j) which we will call interference coefficient. Let's note that on the provided interference coefficients functionalities of Kij unambiguously are restored:

KIJ (P) = KIJ [ $\sum_{i<n} P_l P(l,n)$ ] = $\sum_{i<n} P_l K_{ij}(P(l,n))$ = $\sum_{i<n} P_l K_{ij}(l,n)$ ],

here P - any balanced mode, summation is conducted on all hubs l other than n. In this sense coefficients of interference are coefficients of a "linear" potokoraspredeleniye. It is not necessary to confuse them to potokoraspredeleniye coefficients in their classical understanding. Let's note two properties of the provided interference coefficients: Kij (l, m) = Klm (i, j) - symmetry on couples of indexes, Kij (l, m) = - Kji (l, m) - anti-symmetry in couples of indexes.

For a branch (i, j) the condition (7) means that the linear overflow does not surpass its capacity in it of qij. In this case a linear overflow we will call admissible. The balanced mode we will call linearly - admissible if all linear overflows answering to it are admissible. Thus, for EES squeezed on communications the following theorem is fair.

**Each linearly admissible mode exists.**

As the Kij display linearly, an assessment of linear admissibility of the mode P consists in check of m (m – number of branches of isseduyemy EES) steam of linear inequalities of a look - 1□Kij (P) ≤1.

It is also possible to prove that area of linearly admissible modes:

1) it is convex;

2) contains 2n-2 various extreme modes lying on border the BED in which one of sizes reaches a maximum $\sum_{i \in M} P_i$, where M - own subset of the EES hubs;

3) in the absence of any communication has the general piece (which is not degenerated in a point) with OSR border, and in a case when EES has no the closed contours, each set mode is linearly admissible.

These properties give quality standard to area of the modes distinguished by this criterion.

At design of EES and calculation of the modes it is important to know how weakening of this or that communication will affect a power overflow on other communication. As a first approximation change of functionality of Kij is responsible for this influence. When weakening communication between hubs i and j at a size d (0 <d <qij) arises a new matrix of communications of Q' and the functionalities of Klm answering to it. On a lemma about the return matrix easily we receive:

K'LM = KLM + [dKij (L, m)/z] Kij, (8)

where z = 1 — d Kij (i, j). The address to zero denominator of z is possible only in case after shutdown of communication of EES broke up to the isolated subsystems which are easier for investigating in parts. Equality (8) allows to count quickly new values of coefficients of interference and by that to reveal communications, the most sensitive to the considered switching.

An inspection of existence of linearly admissible modes was carried out numerical experiment on the basis of EES from 21 and 127 knots. Results of calculations of j showed that offered sufficient living conditions of the mode well work as in ring, and treelike schemes of a network and adequately (i.e. as well as the BED) react to communication shutdown:

- 1 ≤ Kij(P) ≤ 1.

As a technical tool for creation of the "Algorithm and Program of Research of Economical and Power Model of the Wholesale Market of Electric Energy" program the program cover of Matlab was chosen. Besides Matlab the MathCAD and Maple programs were used.

The developed algorithm can be useful to scientists, students, the dissipative systems dealing with problems of entropy stability and, in particular, electrical power systems and the market of the electric power.

**2. The used technical means**

The following equipment rooms and software are necessary for functioning of the "Algorithm and Program of Research of Economical and Power Model of the Wholesale Market of Electric Energy" program on the computer of the user:

1.IBM PC/Pentium/personal computer above
2.Random access memory – 512 MV.
3.Free space on the hard drive of 1 MB.
4.The ZhK or SVGA color monitor with resolution 600x800 and above.
5.OC Windows 95 and more modern
6.ON Matlab

**3. Special conditions of application and requirement of organizational, technical and technological character**

Slavia applications have to conform to the modern requirements imposed to operation of educational laboratory and a computer class.

**4. Conditions of transfer and sale of program documentation** "Algorithm and the program of research of economical and power model of the wholesale market of electric energy" and documentation to them can be transferred to the interested person or the organization on the basis of the contract with OMGTU and the author according to the current legislation.

## ADVERTISING AND TECHNICAL DESCRIPTION "Algorithm and the Program of Emergence and Identification of the Determined Chaos in Economic-mathematical Model of the Wholesale Market of Electric Energy"

*FGBOOU WAUGH "Omsk state technical university"*
*Fedorov I.V.*

***UDC** 621.31*
***GRNTI** 44.29.29*

**1. Functional purpose of the program, scope, its restrictions**

The algorithm and the program allow to investigate emergence and identification of the determined chaos in economic-mathematical model of the wholesale market of electric energy and are developed in relation to mathematical models of electrical power systems (EES). Application - in the theoretical and practical works connected with research of entropy dynamics of sizes of the market of electric energy and forecasting of its state. During creation of algorithm the author's materials including used by it in educational process at Power institute of OMGTU were used. In addition, the resources which are available in free access on the Internet or free sale were used.

Transitional fluctuations, are defined as transitional chaos in only case when when the characteristic of transitional fluctuation same as characteristic of chaos on a supervision interval. Above-mentioned definition can be specified by introduction of indicators of Lyapunov. Lyapunov's indicators represent average coefficient (speed) of expansion or compression of i-go of measurement in Rn phase space of an attractor. If it is positive size, then the difference between entry conditions will increase in the special direction on a trajectory. Otherwise the difference will decrease in the special direction on a trajectory. For the steady set mode reduction has to exceed increase: $\sum_{i=1}^{n}\lambda_i < 0$.

Lyapunov's indicators of a chaotic trajectory have, at least, one positive size λi. This characteristic distinguishes chaos from other types of the set modes. For other types of the set mode – points of balance and the periodic decision – all indicators of Lyapunov negative.

Main objective of algorithm is search of positive characteristic indicators of Lyapunov

Computing procedure represents the numerical and analytical method leading to numerical determination of coefficients of Fourier of density of probabilities of indicators of quality, representation of density of probability analytical expressions in the form of the sums of

final number of harmonious components. At the same time becomes possible to carry out the statistical analysis of indicators of quality of variables of a condition of EES (frequency, currents, etc.) and power indicators (active power, electricity consumption etc.).

The program is focused on researches of probabilistic dependences of indicators of quality in EES. In the program it is supposed that the studied piecewise and linear EES with variables in time parameters has mathematical model

$$\frac{dX}{dt} + Q(t) \cdot X(t) = F(t),\ t \in [t_0, t_1],$$

the representing system of the ordinary differential equations concerning a vector of variable conditions *of the X (t)= (x1, x2,..., xi,..., xn)* which components are the aligned stochastic functions from a variable in time a matrix of the Q(t) parameters, having elements $q_{ij}(t),\ i, j = \overline{1, n}$ and a vector of influences *of F(t)= (F1,F2,..., Fi,..., Fn)* which components are the stochastic aligned functions with a matrix of the correlation moments of influences *of KF (t)* order *of n x n, n* – an order of system.

As a technical tool for creation of the "Algorithm and the Program of Emergence and Identification of the Determined Chaos in Economic-mathematical Model of the Wholesale Market of Electric Energy" program the program cover of Matlab was chosen. Besides Matlab the MathCAD and Maple programs were used.

The developed algorithm can be useful to scientists, students, dealing with problems of emergence and identification of the determined chaos in economic-mathematical model of the wholesale market of electric energy and entropy stability of the market of electric energy and electrical power systems in general.

**2. The used technical means**

The following equipment rooms and software are necessary for functioning of the "Emergence and Identification of the Determined Chaos in Economic-mathematical Model of the Wholesale Market of Electric Energy" program on the computer of the user:

IBM PC/Pentium/personal computer above
Random access memory – 512 MV.
Free space on the hard drive of 10 MB.
The color LCD or SVGA monitor with resolution 600x800 and above.
OC Windows XP above
ON Matlab

**3. Special conditions of application and requirement of organizational, technical and technological character**

Conditions of application have to conform to the modern requirements imposed to operation of educational laboratory and a computer class.

**4. Conditions of transfer and sale of program documentation**

The algorithm and the "Definition of Characteristic Indicators of Lyapunov and Detection of Transitional Chaotic Fluctuations" program and documentation to them can be transferred to the interested person or the organization on the basis of the contract with OMGTU and the author according to the current legislation.

## ADVERTISING AND TECHNICAL DESCRIPTION "Algorithm and the Program of Research of Stability of the Wholesale Market of Electric Energy on the basis of Evolution of the Second Variation of Entropy"

*FGBOOU WAUGH "Omsk state technical university"*
*Fedorov I.V.*

***UDC** 621.31*
***GRNTI** 44.29.29*

**1. Functional purpose of the program, scope, its restrictions**

The algorithm and the "Research of Stability of the Wholesale Market of Electric Energy on the basis of Evolution of the Second Variation of Entropy" program allow to investigate stability of the wholesale market of electric energy on the basis of evolution of the second variation of entropy and are developed in relation to mathematical models of electrical power systems (EES). Application - in the theoretical and practical works connected with research of entropy dynamics of sizes of the market of electric energy and forecasting of its state. During creation of algorithm the author's materials including used by it in educational process at Power institute of OMGTU were used. In addition, the resources which are available in free access on the Internet or free sale were used.

The mathematical model is presented in the form:

$$\dot{\delta} = \omega,$$

$$\dot{\omega} = 16{,}667\sin(\delta_л - \delta + 0{,}087)U_л - 3{,}333\omega + 1{,}881,$$

$$\dot{\delta л} = 496{,}872U_л^2 - 166{,}667\cos(\delta_л - \delta - 0{,}087)U_л - 93{,}333U_л - 666{,}667\cos(\delta_л - 0{,}209)U_л + 33{,}333Q_{1b} + 4$$

$$\dot{U}_л = -78{,}764U_л^2 + 26{,}217\cos(\delta_л - \delta - 0{,}015)U_л + 14{,}523U_л + 104{,}869\cos(\delta_л - 0{,}135)U_л - 5{,}229Q_{1b} - 7{,}033$$

where δ(t) - fluctuations of a phase corner on generator tires,

δл(t) - fluctuations of a phase corner in a power line,

ω(t) - a deviation of angular frequency from nominal rate,

Ul (t) - tension at the end of a power line,

Q1b - variable value of jet power.

Here X = (δ,δл, ω, Ul) - a vector of variables of a state,

δ (0)=0,3, δЛ (0)=0,2, Ul (0)=0,97, ω (0)=0÷1,55 - set initial, conditions.

We find the solution for variables of a state: in the mode of chaotic fluctuations at value of the bifurcation Q1b parameter> 1,191, and in the mode of periodic fluctuations at value of the bifurcation Q] b parameter ≤ 1,191.

The most expedient criterion of entropy stability is represented such which performance will provide functioning of EES with the maximum entropy $H \to H_{\max}$ and minimum speed of change of entropy

$$V = \frac{dH}{dt} \to V_{\min}. \quad (1)$$

Condition $H \to H_{\max}$ with need leads to the first criterion of entropy stability: the first variation of entropy is equal to zero, and the second variation of entropy is less than zero.

Condition $\frac{dH}{dt} \to V_{\min}$, together with Δ2H <*0* leads to the second criterion of entropy stability: speed of change in time $\frac{d(\delta^2 H)}{dt}$ it is more than zero or it is equal to zero in a limit case

$$\frac{\partial}{\partial t}(\delta^2 H) \geq 0. \quad (2)$$

Expressions (1) and (2) represent a necessary and sufficient condition of entropy stability.

As analog of function of Lyapunov the second variation of entropy Δ2H is applied. The second variation of entropy Δ2H indicates increase or decrease of entropy and by that points out entropy stability or instability of EES in general and the market of the electric power in particular.

There is one more reason from which follows that the theory of entropy stability has to proceed from properties Δ2H. The second variation Δ2H entropy is directly connected with the

statistical theory of fluctuations. The probability of emergence of fluctuation of indicators of quality of the modes of functioning of EES is expressed by a formula

$$P \sim exp(\Delta H), \quad (3)$$

where $\Delta H$ – a deviation of entropy *of N* from *Hmax*.

Representing

$$\Delta H \approx \delta H + \frac{1}{2}\delta^2 H \quad (4)$$

and considering that for EES ΔH =*0*, we find

$$P \sim \exp\left(\frac{1}{2}\delta^2 H\right). \quad (5)$$

It is necessary for entropy stability that Δ2H <*0*. Therefore the theory of entropy stability should be built on the basis of function Δ2H as analog of function of Lyapunov.

Main objective of algorithm is calculation of the second variation of entropy

As a technical tool for creation of the "Algorithm and the Program of Research of Stability of the Wholesale Market of Electric Energy on the basis of Evolution of the Second Variation of Entropy" program the program cover of Matlab was chosen. Besides Matlab the MathCAD and Maple programs were used.

The developed algorithm can be useful to scientists, students, the volumes of the wholesale market of electric energy which are engaged in forecasting and entropy stability of this market and electrical power systems in general.

**2. The used technical means**

The following equipment rooms and software are necessary for functioning of the "Research of Stability of the Wholesale Market of Electric Energy on the basis of Evolution of the Second Variation of Entropy" program on the computer of the user:

IBM PC/Pentium/personal computer above

Random access memory – 512 MV.

Free space on the hard drive of 10 MB.

The color LCD or SVGA monitor with resolution 600x800 and above.

OC Windows XP above

ON Matlab

**3. Special conditions of application and requirement of organizational, technical and technological character**

Conditions of application have to conform to the modern requirements imposed to operation of educational laboratory and a computer class.

**4. Conditions of transfer and sale of program documentation**

The algorithm and the "Research of Stability of the Wholesale Market of Electric Energy on the basis of Evolution of the Second Variation of Entropy" program and documentation to them can be transferred to the interested person or the organization on the basis of the contract with OMGTU and the author according to the current legislation.

## ADVERTISING AND TECHNICAL DESCRIPTION "Algorithm and the Program of Determination of Market Turbulence at the Daily, Week and Monthly Forecast of Consumption of Electric Energy"

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***UDC** 621.31*

***GRNTI** 44.29.29*

**1. Functional purpose of the program, scope, its restrictions**

The algorithm and the program of determination of market turbulence at the daily, week and monthly forecast of consumption of electric energy allow to investigate fluctuations of the wholesale market of electric energy and are developed in relation to imitating and mathematical models of electrical power systems (EES). Application - in the theoretical and practical works connected with research of dynamics of sizes of the market of electric energy and forecasting of its state. During creation of algorithm the author's materials including used by it in educational process at Power institute of OMGTU were used. In addition, the resources which are available in free access on the Internet or free sale were used.

The system of the connected generators is described by the following differential equations:

$$\frac{dx_1}{dt} = \alpha(y_1 - x_1 - h(x_1)),$$
$$\frac{dy_1}{dt} = x_1 - y_1 + z_1 + \gamma((x_2 - x_1) - (y_2 - y_1) + (z_2 - z_1)),$$
$$\frac{dz_1}{dt} = -\beta * y_1,$$
$$\frac{dx_2}{dt} = \alpha(y_1 - x_1 - h(x_2)),$$
$$\frac{dy_2}{dt} = x_2 - y_2 + z_2 + \gamma((x_1 - x_2) - (y_1 - y_2) + (z_1 - z_2)),$$
$$\frac{dz_2}{dt} = -\beta * y_2, \qquad (1)$$

where h(x) =bx-a+b, if x <-1; ax, if $|x| \le 1$; bx+a-b in other cases.

In system (1) in the mode of the determined chaos it is possible to carry out stabilization of a phase trajectory in a symmetric subspace of X1=X2, X1=-X2 by means of the small managing director of the impact on one of subsystems depending on coordinates of X1 and X2. For this purpose we will rewrite system (1) in new variables in a look:

$$u = (x_1 - x_2)/2, v = (y_1 - y_2)/2, w = (z_1 - z_2)/2$$
$$u` = (x_1 + x_2)/2, v` = (y_1 + y_2)/2, w` = (z_1 + z_2)/2;$$
$$\frac{du}{d\tau} = \alpha(v - u - c(u)),$$
$$\frac{dv}{d\tau} = u - v + w - 2\gamma(u - v + w),$$
$$\frac{dw_1}{d\tau} = -\beta * v,$$
$$\frac{du`}{d\tau} = \alpha(v` - u` - c(u`)),$$
$$\frac{dv`}{d\tau} = u` - v` + w`,$$
$$\frac{dw`}{d\tau} = -\beta * v`, \qquad (2)$$

where c(u)= (h (x1-h(x2))/2, c (u')= (h (x1+h(x2))/2.

Here evolution of symmetric movements is defined the first three equations of system (2), and their stability – the last three.

Let's consider a case of stabilization of the symmetric X1=X2 modes. Such symmetric modes are answered by a motionless point with coordinates of u=0, v=0, w=0. To investigate it on stability, it is enough to consider the first three equations of system (2). Let's add to the first equation of this system the small influence of F(u) =r(X1-X2) depending on u coordinate, and we will define by Rausa-Gurvits's criterion at what values r the specified influence will stabilize a motionless point of u=0, v=0, w=0. Thereby we will define conditions of stabilization of the symmetric modes.

It is necessary to pay attention to situation that at the accepted yi and xn+1 values positive diagonal elements of a matrix of A. Eto prevail causes nonnegativity of all bij elements of the return to it matrixes of Century. In accessory APM (area of the possible modes) not only the separate mode, but also their set concluded in a n-dimensional parallelepiped of pimin $\leq$ by pi $\leq$ pimax on a condition allows to estimate the specified property of a matrix:

$$-0{,}5 \leq \sum bij\ pimin \leq \sum bij\ pi \leq \sum bij\ pimax \leq 0{,}5. \qquad (3)$$

For each knot, for example, 27-nodal EES (electrical power system) set ranges of possible not balances of active power, and check on a condition (3) showed accessory of the expected modes of area of existence of the modes in the full scheme that allows to speak about compliance of the scheme to requirements of electroconsumers.

At design and operation of EES often there is a problem of an assessment of existence of the mode in the scheme at shutdown of one or several elements of a network. The offered method allows to solve this problem, without carrying out all cycle of calculations of new matrixes And yes In, the demanding considerable costs of calculation.

At a rupture of communication between i-m and j-m in knots the system has a new matrix And yes the return to it Bij matrix = Aij-1. Let's designate through b(i) = (bi1,…, bin) i-yu a line of a matrix In, Δij=b(i) - b(j). Then on a lemma about the return matrix:

BIJ = IN + ΔBij,

$$\Delta Bij = \frac{q_{ij}}{1 + q_{ij}(-b_{ii} - b_{jj} + 2b_{ij}} \Delta_{ij}^{T} \Delta_{ij} \qquad (4)$$

Thus, for an assessment of existence of the mode in the incomplete scheme it is enough to have a vector r and a matrix In and to specify what shutdown of communication happened. This situation allows to reveal influence of this or that communication on admissibility of the set not balance, i.e. to range communications and to estimate the size of a necessary resource of management of not balances in the set knots where there is such opportunity.

Main objective of algorithm is calculation of expected fluctuations of volumes of consumption of electric energy.

As a technical tool for creation of the "Algorithm and the Program of Determination of Market Turbulence at the Daily, Week and Monthly Forecast of Consumption of Electric Energy" program the program cover of Matlab was chosen. Besides Matlab the MathCAD and Maple programs were used.

The developed algorithm can be useful to scientists, students, the volumes of the wholesale market of electric energy which are engaged in forecasting and entropy stability of this market and electrical power systems in general.

**2. The used technical means**

The following equipment rooms and software are necessary for functioning of the "Algorithm and the Program of Determination of Market Turbulence at the Daily, Week and Monthly Forecast of Consumption of Electric Energy" program on the computer of the user:

IBM PC/Pentium/personal computer above

Random access memory – 512 MV.

Free space on the hard drive of 10 MB.

The color LCD or SVGA monitor with resolution 600x800 and above.

OC Windows XP above

ON Matlab

**3. Special conditions of application and requirement of organizational, technical and technological character**

Conditions of application have to conform to the modern requirements imposed to operation of educational laboratory and a computer class.

**4. Conditions of transfer and sale of program documentation**

The algorithm and the "Determination of Market Turbulence at the Daily, Week and Monthly Forecast of Consumption of Electric Energy" program and documentation to them can be transferred to the interested person or the organization on the basis of the contract with OMGTU and the author according to the current legislation.

## ADVERTISING AND TECHNICAL DESCRIPTION "The Program of Calculation of Parameters and Characteristics of Basic Logical Elements on MOP — Transistors"

*FGAOU IN "THE SOUTHERN FEDERAL UNIVERSITY"*
*Palij A.V.*

***UDC** 621*
***GRNTI** 47.41.99*

**1. Functional purpose of a product, area of its application, its appointment**

The program contains the description of carrying out calculation of parameters and characteristics of Basic logical Elements on MOP - transistors within the course "Circuitry of Electronic Means" for the students who are trained in the directions: 11.03.03 - "Designing and technology of electronic means" and 11.03.04 - "Electronics and a nanoelectronics", and also for experts in the field of circuitry.

In work the description of Basic logical Elements is given in MOP - transistors which are widely used in equipment PLIC (programmable logical integrated circuits). The short theoretical part is given and key parameters and characteristics are described.

The element base of electronic means is generally made by integrated circuits. Since their invention integrated circuits constantly are improved and become complicated. The characteristic of complexity of integrated circuits is the integration level estimated by either number of Basic logical Elements, or number of transistors which can be realized on a crystal.

At the initial stage of development of digital electronics the large number of the various circuitry decisions realizing the main logical operations was developed. However wide practical use was received only by some of them. These elements in the best way combine a row important as for the consumer, and the manufacturer of characteristics.

Now when developing integrated circuits the greatest distribution was gained by the following Basic logical Elements:

- diode-transistor logic (DTL);
- transistor-transistor logic (TTL, TTLSh);
- emitter and connected logic (ECL);
- integrated and injection logic (I2L);
- logic on the same field transistors (n-MOP and P-MOP);
- logic on complementary field transistors (KMOP).

The first three types use bipolar transistors, the last two – field.

Distribution of several types of logic which are carrying out the same logical functions is explained by distinction of their main characteristics that depending on technical requirements and service conditions allows to build electronic means the required parameters.

Various characteristics of currents or tension can be delivered to values of logical functions and arguments in electric circuits in compliance. It can be both their some established sizes, and parameters of electric impulses. According to it distinguish potential and pulse ways of representation of logical variables.

At a potential way of representation to values ravine. 0 and ravine. 1 put two various levels of tension or current in compliance. Depending on what of these levels is specifically put in compliance to values 0 and 1, distinguish positive and negative logicians.

In positive logic to value ravine. 1 put also compliance bigger, and to value the ravine. 1 – smaller value of tension or current. In negative logic on the contrary – to great values of an electric signal there correspond values the ravine. 0, smaller – values the ravine. 1. This definition is fair for any polarity of the used tension or any directions of course of currents.

Feature of the integrated circuits executed on field transistors is low power consumption. However on speed these elements concede to logic on bipolar transistors so far. This type of logic also possesses a high noise stability. In comparison with bipolar, field transistors have the smaller sizes more simply in production that allows to place more elements on crystal unit of area. According to these features the area of their application is limited to functionally difficult devices of low speed and a small tokopotrebleniye.

Forecasts show that in process of improvement of the technology directed to increase of their speed, this class of integrated circuits gradually will become the most mass. First of all it concerns integrated circuits KMOP.

Now in logical schemes only MOP-transistors with oxide SiO2 dielectric therefore logical elements on MOP-transistors are considered below are used. MOP-tranzistornoy logicians are the cornerstone MOP-transistor keys inverters. Keys on MOP-transistors, as well as on bipolar, in the static mode are characterized by residual current (in the locked state) and the residual tension (abroach). Three kinds MOP-tranzistornykh of keys are known: with resistor loading, with dynamic (transistor) loading and complementary (KMOP) keys. The last are executed on complementary transistors, i.e. on transistors with channels of opposite type of conductivity. Let's consider serially static parameters of the listed three versions.

For an example we will give a key with resistor loading. The scheme of such key executed on the n-channel transistor is shown in fig. 1. For locking of a key on a lock of the transistor E tension moves <U0 where U0 – threshold tension.

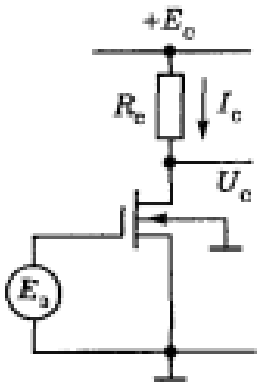



Fig. 1. MDP-tranzistorny a key with resistive loading

In the locked transistor residual current is the return current stock r - n - transition as this transition works at the return shift close to the EU. Therefore, current makes no more than 10-9-10-10 And (provided that the surface of a crystal is well processed and there are no near-surface channels). At the specified values of residual current by power failure of IcRc it is possible to neglect and consider that the maximum tension on the locked Umaks key – the EU.

For unlocking of a key on a lock tension E> U0 moves. This tension has to be rather big. Then working current of an open key (saturation current) is defined, how at a bipolar key, by external elements of the scheme:

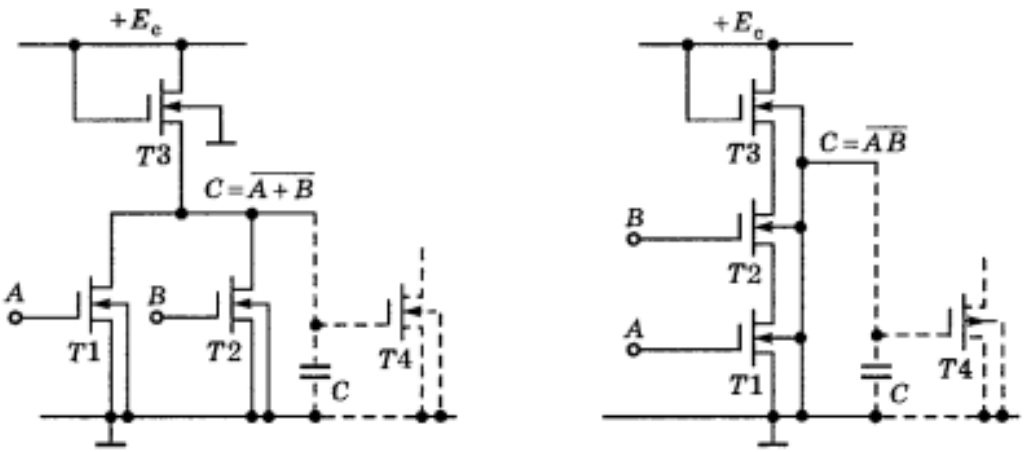
Isi = (the EU – Uoct) / Rc ≈ EcRc. (1)

As well as for MOP-tranzistornogo a key, we will be the basis transistors with the induced n-channel (as the positive supply voltage more convenient at the analysis is peculiar to them).

Analysis MOP-tranzistornykh of logical elements is simpler, than bipolar because entrance (barrier) chains practically do not consume current. Therefore, during the work in a chain separate logical elements function independently from each other and each of them can be analyzed, distracting from influence of the previous and subsequent logical element. In particular, the logical U0 and U1 levels do not depend on loading and remain same, as well as when idling. Influence of the subsequent (load) logical element is reduced only to increase in output capacity of this logical element.

In fig. 2 two standard options logical an element, executed on MOP-transistors with the n-channel are shown. In both options dynamic loading as use of load resistors leads to sharp increase in the area is used and deprives of MOP of one of its main advantages – high extent of integration.

The logical element shown in fig. 3 (a) is constructed by the same principle, as a transistor key with resistive loading (fig. 3): logical T1 and T2 transistors are switched on in parallel, unlocking of each of them leads to decrease in output level, i.e. the scheme carries out the ILI-NE function.




a) b)

Fig. 3. Logical elements of ILI-NE (a) and I-NE (b) on MOP-transistors

Logical levels in MOPTL correspond to the output tension of the opened and locked key. At the corresponding geometry of transistors it has so small value (0,05-0,15 B), as well as in bipolar keys. Therefore it is possible to consider:

U0 = Uost ≈ 0,1 V. (2)

Let's remind that small residual tension means as it is possible the smaller width of the channel of the load transistor in comparison with width of the channel of the active transistor.

In the closed condition of a key output tension is close to supply voltage:

U1 ≈ Ec. (3)

Respectively logical difference makes:

Ul = Ec – Uost ≈ Ec. (4)

Usually the supply voltage in MOPTL is chosen 3-4 times more threshold tension. Therefore, if U0 = 1,5-3 B, then logical difference (5-10 V) much more exceeds the values peculiar to the schemes I2L, ESL and even TTL (at supply voltage of 4-5 V).

One more advantage of MOPTL is the raised noise stability. Really, the U0 level acts on an entrance of the locked transistor. Means, unlocking of the transistor requires U0 tension – U0 close to threshold, i.e. 1,5-3 B whereas at bipolar the logical elements considered above it makes (1-2) U *, i.e. 0,7-1,4 Century.

The logical element shown in fig. 3(b) is characteristic not parallel, but consecutive turning on of logical transistors. Therefore course of current in a chain, so, and the low U0 level of output tension are possible only when unlocking all (in this case both) logical transistors. It takes place when giving the U1 level on all logical entrances. From here it is clear that this logical element carries out the I-NE function.

The U1 level in this scheme same, as in previous, butthe U0 level is more – it is proportional to number the follower -but the switched-on logical transistors can also make0,2-0,5 In and more. Respectively there will be a logical difference less. At supply voltages of 10 V and more this shortcomingit is not enough sushchestven, however with small threshold tension the increased U0 level presents a certain problem in low-voltage schemes.

Speed of MOPTL, as well as the elementary MOP-keys, is limited to the speed of a recharge of output capacity (naris. 3 it is shown by the shaped line). The size of this capacity is proportional to quantity of load logical elements, and also depends on metallization capacity.

For increase of speed it is necessary to increase working currents of transistors, i.e. their specific the steepness. However etooznachat increase in width of the channel, i.e. the space occupied by transistors. Besides, increase in working currents is connected with increase in power consumption, and it is one more obstacle in a way of increase of extent of integration. Because of noted difficulties real it are MOPTL less high-speed, than bipolar.

**2. The used technical means**

PEVM, system programs (windows), built-in Matlab language.

**3. Special conditions and requirements of organizational, technical and technological character**

For educational process with use of this software product there has to be an existence of a display class (not less than 10 workplaces), the trained educational support personnel.

**4. Conditions of transfer of documentation or its sale**

Documentation can be transferred on the contractual conditions stipulated in each case.

## ADVERTISING AND TECHNICAL DESCRIPTION "Program of Calculation of Parameters and Characteristics of Basic Logical Elements of Integrated and Injection Logic"

*FGAOU IN "THE SOUTHERN FEDERAL UNIVERSITY"*
*Palij A.V.*

***UDC** 621*
***GRNTI** 47.41.99*

**1. Functional purpose of a product, area of its application, its appointment**

The program contains the description of carrying out calculation of parameters and characteristics of Basic logical Elements of integrated and injection logic of logic within the course "Circuitry of Electronic Means" for the students who are trained in the directions: 11.03.03 - "Designing and technology of electronic means" and 11.03.04 - "Electronics and a nanoelectronics", and also for experts in the field of circuitry.

The description of Basic logical Elements of integrated and injection logic which are widely applied in equipment PLIC (programmable logical integrated circuits) is provided in work. The short theoretical part is given and key parameters and characteristics are described.

The element base of electronic means is generally made by integrated circuits. Since their invention integrated circuits constantly are improved and become complicated. The characteristic

of complexity of integrated circuits is the integration level estimated by either number of Basic logical Elements, or number of transistors which can be realized on a crystal.

At the initial stage of development of digital electronics the large number of the various circuitry decisions realizing the main logical operations was developed. However wide practical use was received only by some of them. These elements in the best way combine a row important as for the consumer, and the manufacturer of characteristics.

Now when developing integrated circuits the greatest distribution was gained by the following Basic logical Elements:

- diode-transistor logic (DTL);
- transistor-transistor logic (TTL, TTLSh);
- emitter and connected logic (ECL);
- integrated and injection logic (I2L);
- logic on the same field transistors (n-MOP and P-MOP);
- logic on complementary field transistors (KMOP).

The first three types use bipolar transistors, the last two – field.

Distribution of several types of logic which are carrying out the same logical functions is explained by distinction of their main characteristics that depending on technical requirements and service conditions allows to build electronic means the required parameters.

Various characteristics of currents or tension can be delivered to values of logical functions and arguments in electric circuits in compliance. It can be both their some established sizes, and parameters of electric impulses. According to it distinguish potential and pulse ways of representation of logical variables.

At a potential way of representation to values ravine. 0 and ravine. 1 put two various levels of tension or current in compliance. Depending on what of these levels is specifically put in compliance to values 0 and 1, distinguish positive and negative logicians.

In positive logic to value ravine. 1 put also compliance bigger, and to value the ravine. 1 – smaller value of tension or current. In negative logic on the contrary – to great values of an electric signal there correspond values the ravine. 0, smaller – values the ravine. 1. This definition is fair for any polarity of the used tension or any directions of course of currents.

Basic Elements of I2L were developed especially for use in big integrated circuits. They are distinguished high, inaccessible for TTL and ESL, by extent of integration, the lowered supply voltage, simplicity of coordination with the TTL elements and an opportunity to regulate over a wide range speed by change of power consumption.

The integrated injection logic is used in the SBIS equipment (superbig integrated circuits). The chain of two I2L inverters has an appearance (fig. 1).

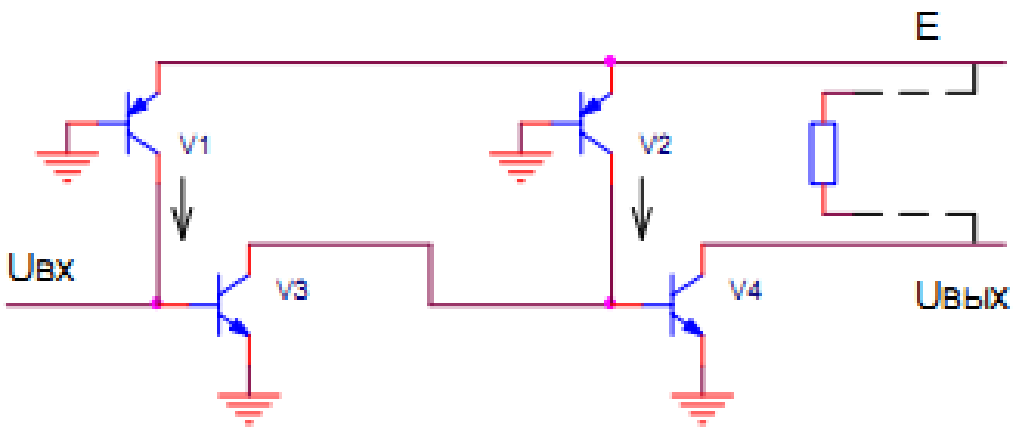



Fig. 1. Chain of two I2L inverters

Via V1 and V2 transistors (the called injectors) the direct current, the defined with a shift of E supply voltages proceeds. This current is established equal 1 on - 30 mk. At the same time the supply voltage is equal to 0,5 - 0,6 V. Napravleniye of flowing of this current depends on an

entrance signal. If Uvkh = 0, then current of IV1 flows into a source of an entrance signal. The V3 transistor – is closed therefore current of IV2 flows into base of the V4 transistor. At this UkV3 = 0,7 B, UkV4 = 0 Century.

If UVKH = 1, then current OF IKV1 flows into base of the V3 transistor. This transistor enters the mode of saturation and UkV3 = 0. I kV2 flows into the V3 transistor. The V4 transistor is closed, and UkV4 = 1. Logical levels are equal:

- logical zero 50 mV;
- logical unit of 0,6 Century.

It was convenient to use multicollector transistors. On schemes injectors of current began to designate in the form of generators of current (fig. 2).

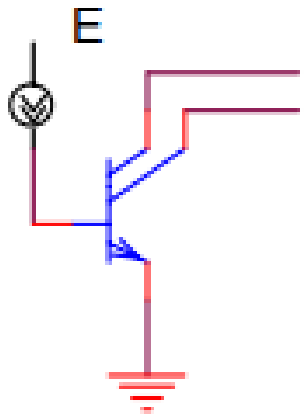



Fig. 2. Image of the generator of current

We will consider realization of logical function with use of multicollector transistors on the example of the scheme given on fig. 3.

I2L – schemes have the smallest work of switching (And = Pτ = 0,05 MW · 20 nanoseconds = 1 pdzh). However there are difficulties of interface to external devices.

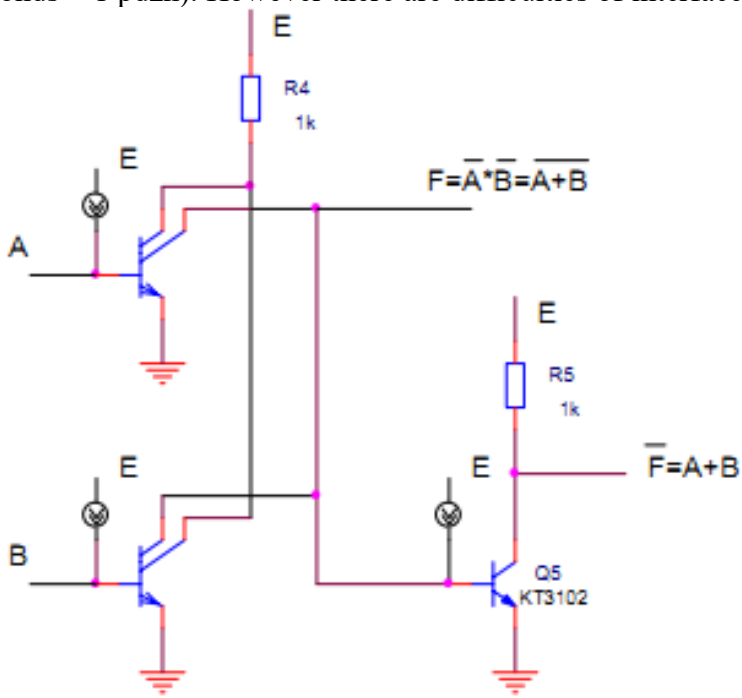



Fig. 3. Realization of logical function with use of multicollector transistors

**2. The used technical means**

PEVM, system programs (windows), built-in Matlab language.

**3. Special conditions and requirements of organizational, technical and technological character**

For educational process with use of this software product there has to be an existence of a display class (not less than 10 workplaces), the trained educational support personnel.

**4. Conditions of transfer of documentation or its sale**

Documentation can be transferred on the contractual conditions stipulated in each case.

## ADVERTISING AND TECHNICAL DESCRIPTION "Program of Calculation of Parameters and Characteristics of Basic Logical Elements of the Diode-transistor Logic"

*FGAOU IN "THE SOUTHERN FEDERAL UNIVERSITY"*

*Palij A.V.*

***UDC** 621*

***GRNTI** 47.41.99*

1. **Functional purpose of a product, area of its application, its appointment**

The program contains the description of carrying out calculation of parameters and characteristics of Basic logical Elements of the diode-transistor logic within the course "Circuitry of Electronic Means" for the students who are trained in the directions: 11.03.03 - "Designing and technology of electronic means" and 11.03.04 - "Electronics and a nanoelectronics", and also for experts in the field of circuitry.

The description of Basic logical Elements of the diode-transistor logic which are widely applied in equipment PLIC (programmable logical integrated circuits) is provided in work. The short theoretical part is given and key parameters and characteristics are described.

The element base of electronic means is generally made by integrated circuits. Since their invention integrated circuits constantly are improved and become complicated. The characteristic of complexity of integrated circuits is the integration level estimated by either number of Basic logical Elements, or number of transistors which can be realized on a crystal.

At the initial stage of development of digital electronics the large number of the various circuitry decisions realizing the main logical operations was developed. However wide practical use was received only by some of them. These elements in the best way combine a row important as for the consumer, and the manufacturer of characteristics.

Now when developing integrated circuits the greatest distribution was gained by the following Basic logical Elements:

- diode-transistor logic (DTL);
- transistor-transistor logic (TTL, TTLSh);
- emitter and connected logic (ECL);
- integrated and injection logic (I2L);
- logic on the same field transistors (n-MOP and P-MOP);
- logic on complementary field transistors (KMOP).

The first three types use bipolar transistors, the last two – field.

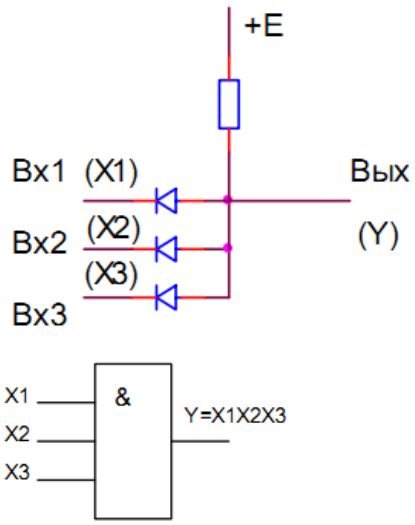
Distribution of several types of logic which are carrying out the same logical functions is explained by distinction of their main characteristics that depending on technical requirements and service conditions allows to build electronic means the required parameters.

Various characteristics of currents or tension can be delivered to values of logical functions and arguments in electric circuits in compliance. It can be both their some established sizes, and parameters of electric impulses. According to it distinguish potential and pulse ways of representation of logical variables.

At a potential way of representation to values ravine. 0 and ravine. 1 put two various levels of tension or current in compliance. Depending on what of these levels is specifically put in compliance to values 0 and 1, distinguish positive and negative logicians.

In positive logic to value ravine. 1 put also compliance bigger, and to value the ravine. 1 – smaller value of tension or current. In negative logic on the contrary – to great values of an electric signal there correspond values the ravine. 0, smaller – values the ravine. 1. This definition is fair for any polarity of the used tension or any directions of course of currents.

The diode scheme of a logical element I, the table of the validity and conditional graphic symbol are shown in fig. 1.

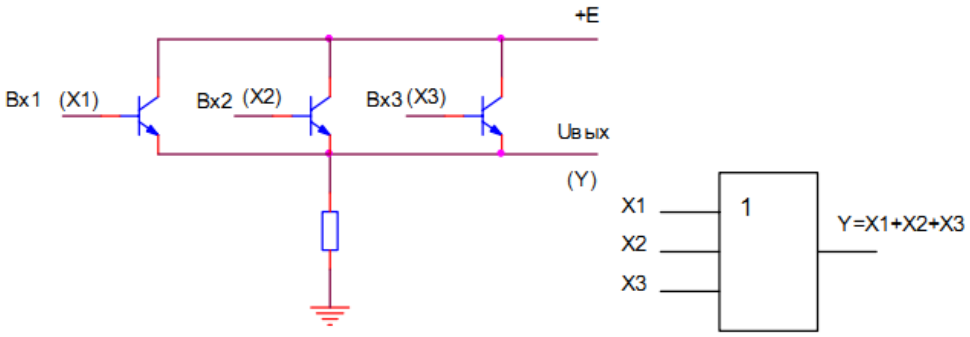



| X1 | X2 | X3 | Y |
|---|---|---|---|
| 0 | 0 | 0 | 0 |
| 0 | 0 | 1 | 0 |
| 0 | 1 | 0 | 0 |
| 0 | 1 | 1 | 0 |
| 1 | 0 | 0 | 0 |
| 1 | 0 | 1 | 0 |
| 1 | 1 | 0 | 0 |
| 1 | 1 | 1 | 1 |

Fig. 1. Diode scheme of a logical element I

If at least at one of entrances of the scheme there is a logical zero (level of 0 V), then Uvykh = 0,7 B (i.e. logical 0). If is present at all entrances logical 1, then all diodes will be closed also by Uvykh = Epit (i.e. logical 1).

In the scheme of the OR logical element as the diode transition the emitter base of the bipolar transistor is used. The diode-transistor scheme of the OR logical element, the table of the validity and a conditional graphic symbol are shown in fig. 2.




| X1 | X2 | X3 | Y |
|---|---|---|---|
| 0 | 0 | 0 | 0 |
| 0 | 0 | 1 | 1 |
| 0 | 1 | 0 | 1 |
| 0 | 1 | 1 | 1 |
| 1 | 0 | 0 | 1 |
| 1 | 0 | 1 | 1 |
| 1 | 1 | 0 | 1 |
| 1 | 1 | 1 | 1 |

Fig. 2. The diode-transistor scheme of the OR logical element

If at least at one entrance there is high level of entrance tension (logical 1), then at the exit, irrespective of potentials of other entrances, high level, i.e. logical 1 is established. And only if on all entrances the tax logical 0 at the exit is established logical 0.

2. **The used technical means**

PEVM, system programs (windows), built-in Matlab language.

3. **Special conditions and requirements of organizational, technical and technological character**

For educational process with use of this software product there has to be an existence of a display class (not less than 10 workplaces), the trained educational support personnel.

4. **Conditions of transfer of documentation or its sale**

Documentation can be transferred on the contractual conditions stipulated in each case.

## ADVERTISING AND TECHNICAL DESCRIPTION "Solution of Tasks on Stretching Compression of " Resistance of Materials " in the MathCAD Program" Program

*FGBOOU WAUGH "Omsk state technical university"*
*Pen'kov I.A., Fedorova M.A.*

***UDC** 539.4*
***GRNTI** 30.19.33, 30.19.51*

**1. Functional purpose of the program and scope**

Application of computer programs when studying the most various disciplines is very widespread now. It and is clear: first, conveniently; secondly, use of computers is one of means of increase of interest in education. Computer training bears in itself huge motivational potential. Could not stand aside and such discipline as "Resistance of materials", considered at students, and not only at them, rather difficult.

It is known that problems of the course "Resistance of Materials" conditionally are divided into two groups: design and test. The students studying this course get acquainted with techniques of the solution of tasks of both groups. Still quite recently the solution of tasks was complicated by large volume of computing operations which students carried out "in manual". Moreover, the carried-out tasks needed check which also demands certain time expenditure, especially in case of the wrong decision. It was necessary to reduce the volume of the carried-out tasks when studying discipline because of these difficulties, so, and the understanding, deep studying of this science was a little doubtful.

Use of personal computers was some kind of break – now the huge volume of computing operations is carried out very quickly and precisely, it allowed to expand a circle of solvable tasks, to thereby increase quality of studying of this discipline.

Use of such settlement programs as Excel, Mathcad, Maple and others at the solution of tasks allows to receive fast and high-quality calculation. But the aforesaid programs quickly and easily carry out the numerical decision of part of a task, the solution of tasks in full still remains difficult, and correctness check still remains for the teacher.

As a technical tool for creation of the program the program cover of MathCAD was chosen. The main advantages of this cover is:

1. Universality of a MathCAD package which can be used for the solution of the most various engineering, economic, statistical and other scientific tasks.

2. Programming in the standard mathematical language allows to break a language barrier between car and the user. Potential users of a package – from students to academicians.

3. Combined use of a text editor, the formular translator and graphic processor allows the user to receive the ready document during calculations.

Application of the "Solution of Tasks on Stretching Compression of " Resistance of Materials " in the MathCAD Program" program offered by authors significantly changes approach to the solution of tasks. For the first time there is a software product adapted directly for performance of test tasks. There was a possibility of an independent assessment by the student of correctness of the decision.

Principle of work with the program:

Basic data are set (are highlighted in the orange color):

Geometrical parameters (m): *l* – length of a core, *an* – a point of application of force *of P1, b* – a point of application of force *of P2, c, d* – a point began also the end of action of the distributed loading respectively.

Loadings: *P1, P2* – the concentrated forces (N), *q* – intensity of the distributed loading (N/m).

Characteristics of materials: E – the module the Ship's boy (Pa), σ _ max – the admissible tension (Pa), w_max – admissible longitudinal movements (m).

If it is necessary to increase the number of the concentrated forces or the distributed loadings we make change to the equation of the distributed loading (1) (it is highlighted in the violet color).

We include the relevant group of boundary conditions (group of the equations (2)), for this purpose we right-click on the corresponding equation and in the dropping-out context menu to select item to include calculation. After that to press the pictogram calculation on the top MathCAD panel.

After that the program will pick up initial parameters and will construct epyura of internal longitudinal forces and longitudinal movements.

For check of calculations to round up the size of square section to the closest of a normal row. To compare the maximum tension and movements to admissible values.

Huge plus of the program offered by authors is its simplicity. For work with this program are not required any additional knowledge, except habitual knowledge of the computer at the level of the user and the minimum skills of work in MathCAD. After acquaintance to this product the student can independently solve a huge number of the most versatile tasks.

Use of the "Solution of Tasks on Stretching Compression of " Resistance of Materials " in the MathCAD Program" software product opens big prospects in teaching and when studying discipline "Resistance of materials". First, quality of the carried-out tasks increases. Secondly, time demanded at the decision "in manual" is considerably reduced, and it means that the possibility of the solution of additional tasks appears. Thirdly, such work is interesting and fascinating, is assessed by students very positively. Possession of computer technologies is a sign of the general culture today, and for university graduates knowledge of computer technologies – a professionalism sign.

Of course, the course "Resistance of Materials" is not limited only to tasks on stretching compression. When studying discipline it is required to master the solution of tasks on torsion, a bend and their combinations. It should be noted that sound studying of the very first group of tasks, on the stretching compression considered in the program is a reserve for development of tasks and other types.

During creation of the "Solution of Tasks on Stretching Compression of " Resistance of Materials " in the MathCAD Program" program authors were guided by the principle of systemacity and sequence in a material arrangement. The size of the file, the offered calculation, makes 223 KB.

The "Solution of Tasks on Stretching Compression of " Resistance of Materials " in the MathCAD Program" program will be useful to students and teachers of technical colleges, to the experts perfroming strength and zhyostkostny calculations of the beams working for stretching compression and other interested persons.

**2. The used technical means**

The following equipment rooms and software are necessary for functioning of the "Solution of Tasks on Stretching Compression of " Resistance of Materials " in the MathCAD Program" program on the computer of the user:

IBM PC 486/Pentium/ADM/personal computer.

Random access memory – 256 MB (512 MB are recommended).

Free space on the hard drive of 350 MB.

The color SVGA monitor with resolution 1024×768 above.

Processor: 32-bit or 64-bit (x86-64, EM64T) with a clock frequency of 400 MHz or above (700 MHz are recommended).

Operating system: Windows XP above.

MathCAD 14 above.

Mouse or other compatible specifying device.

**3. Special conditions of application and requirement of organizational, technical and technological character**

Conditions of application of the program conform to the modern requirements imposed to operation of the personal computer. Requirements to the user: skills of work in MathCAD, understanding of the principle of the solution of tasks on stretching compression of discipline "Resistance of materials".

**4. Conditions of transfer and sale of program documentation**

The "Solution of Tasks on Stretching Compression of " Resistance of Materials " in the MathCAD Program" program and documentation to it can be transferred to the interested person or the organization on the basis of the contract with OMGTU and authors according to the current legislation.

**5. Literature**

Makarov, E. G. Engineering calculations in MathCAD 15: training course / E. G. Makarov. – SPb.: St. Petersburg, 2011. – 400 pages.

Informatics: a workshop on technology of work on the computer / under the editorship of N. V. Makarova. – M.: Finance and statistics, 1998. – 384 pages.

Resistance of materials with bases of the theory of elasticity and plasticity: the textbook / under the editorship of G. S. Vardanyan. – M: DIA, 1995. – 568 pages.

Feodosyev, V. I. Soprotivleniye of materials / V. I. Feodosyev. – M.: Science, 1979. – 530 pages.

# ELECTRONIC RESOURCES FOR THE SOLUTION OF ORGANIZATIONAL TASKS IN AN EDUCATION SYSTEM.

## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic educational system "professional standards of the Russian Federation: qualification requirements, training, certification and certification"

*Scientific and Innovative Center limited liability company*
*Bobkova E.YU., Magsumov T.A., Maksimov YA.A., Golodyaev D.A.*

***UDC*** *378*
***GRNTI*** *14.35.07*

1. **Functional purpose of development, scope, its restrictions**

From 01.07.2016 the changes in the Labour code of the Russian Federation doing obligatory use of professional standards regarding requirements to qualification, the necessary worker for performance of a certain labor function came into force.

Characteristics of qualification which contain in professional standards are applied by employers as a basis for definition of requirements to qualification of workers taking into account features fulfilled by workers of the labor functions caused by the applied technologies and the accepted organization of production and work.

The register of professional standards is posted on the websites: Ministry of Labor of Russia "Professional standards" (http://profstandart.rosmintrud.ru) and Federal State Budgetary Institution Research Institute of Work and Social Insurance of Ministry of Labor of Russia (http://vet-bc.ru). The professional standards approved by orders of Ministry of Labor of Russia are placed also in help systems of legal information.

In spite of the fact that on the same resources all information on professional standards, including about developed and planned to development is placed, rather extensive complex of questions of practical realization of this initiative remains not resolved so far.

Methodological lacunas in conceptual realization of this legislative initiative generate a dialectic contradiction in the practical sphere of its approbation and introduction that staticizes development of the modern electronic resources allowing to resolve many contradictions in the field.

Electronic educational system "Professional standards of the Russian Federation: Qualification requirements, training, certification and certification" belongs to this category of resources.

Main objective of EOS "Professional standards of the Russian Federation: Qualification requirements, training, certification and certification" – to provide the qualified methodical support of the Russian employers and effective variable training of workers of all spheres of economic system of the Russian society according to professional standards on the basis of electronic technologies.

EOS "Professional standards of the Russian Federation: Qualification requirements, training, certification and certification" is result of the joint research work of three Russian research teams and at the time of registration has no analogs.

In the conceptual plan of EOS includes three large blocks, see fig. 1:

Fig. 1. EOS conceptual blocks "Professional standards of the Russian Federation: Qualification requirements, training, certification and certification"

EOS belongs to systems of limited access, the user gets individual access to it on demand.

After receiving access, the EOS title screen "Professional standards of the Russian Federation becomes available to the user: Qualification requirements, training, certification and certification" from which it, by means of interactive contents, can move according to the main sections EOS.

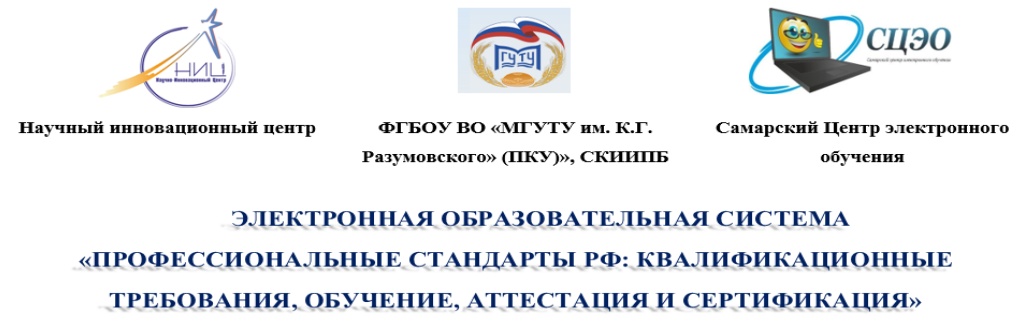



Fig. 1. Title screen e EOS "Professional standards of the Russian Federation: Qualification requirements, training, certification and certification"

Movement according to sections is carried out on the basis of technology of hypermedia.

In the first block the register of the existing professional standards and actual methodical explanations on their application is submitted. Not only acquaintance in on-line mode, but also preservation of materials at the expense of electronic communication of the user is authorized.

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**Реестр действующих профессиональных стандартов**

Fig. 2. Main units of the section "Register of Actual Professional Standards"

The structure of the block "Advanced training courses" is presented in fig. 3.

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Fig. 3. Main units of the section "Advanced training courses"

After receiving access to a concrete course, the user the directory and methodical section of this block containing lecture material, control estimated means and requirements to total certification work is available.

Fig. 4. Main units of standard advanced training course from the section "Advanced training courses"

Blocks "Advanced training courses" and "Professional Retraining" are created in uniform logic of a statement.

The structure of the Professional Retraining block is presented in fig. 5.

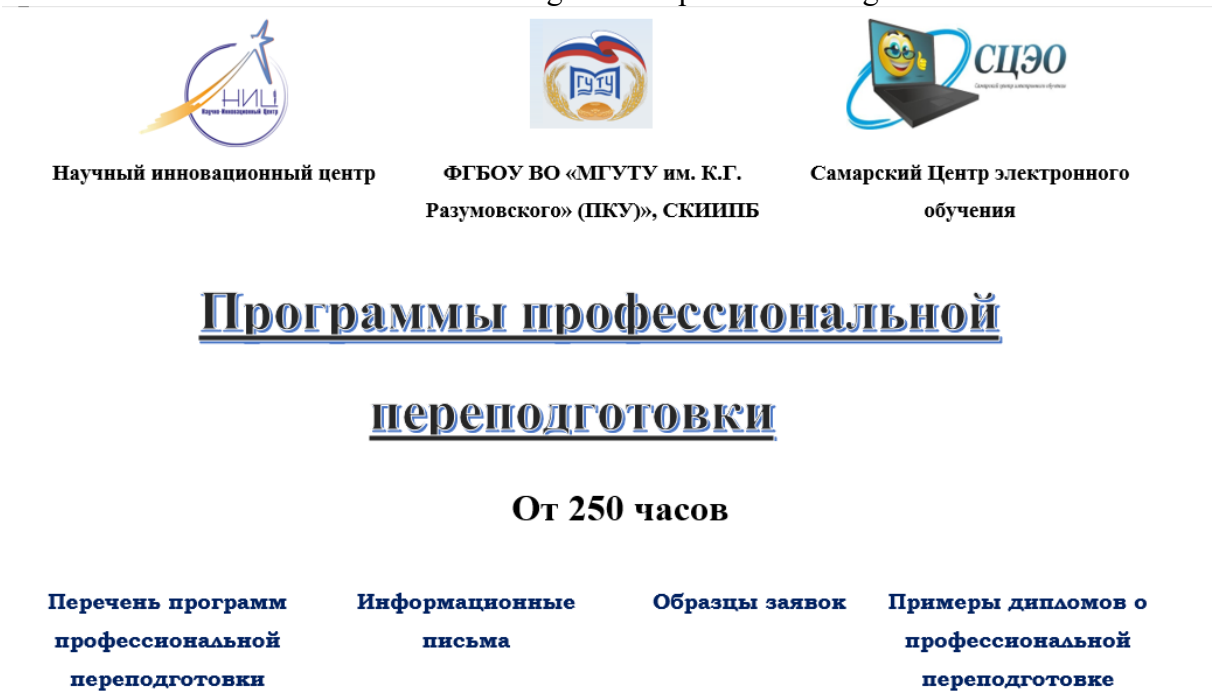



Fig. 5. Main units of the section "Professional Retraining"

After receiving access to the specific program to professional retraining, the user the directory and methodical section of this block containing lecture material, control estimated means and requirements to total certification work is available.

Fig. 6. Main units of standard advanced training course from the section "Professional Retraining"

**2. The used technical means**

For development use specialized technical means are not required. Internet access from any device is necessary for the user, turning on also mobile devices. EOS can be started on any stationary or mobile device with the preset software allowing to look through files with the PDF expansion.

**3. Special conditions of application and requirement of organizational, technical and technological character**

Special conditions of application and requirements of organizational, technical and technological character are not required.

**4. Conditions of transfer of program production or its sale**

Development is a commercial product and extends from a consent and by agreement with group of authors and the organizations of developers before date of transmission of exclusive rights to the third parties.

## ADVERTISING AND TECHNICAL DESCRIPTION "Multimedia Slide Lectures for Distance Learning on Discipline "Business Planning" (38.03.02 Management, Level — a Bachelor Degree)"

*FGBOOU WAUGH "Omsk state technical university"*
*Ivanov V.N.*

***UDC*** *378*
***GRNTI*** *14.35.07, 82.05.21, 06.35.35*

**1. Functional purpose of the program, scope, its restrictions**

Purpose of the multimedia educational and methodical complex (EMC) on discipline "Business planning": independent use by students as educational and methodical materials at distance learning for theoretical preparation and self-examination. Multimedia UMK is suitable for maintenance of all types of educational activity at full-time courses.

During creation of a multimedia educational and methodical complex for distance learning on discipline "Business planning" author's materials were used: text material, drawings, tables, test blocks. The resources which are available in free access on the Internet were in addition used.

Training materials have:

- the accurate modular structure coordinated with the working program of discipline;
- complexity (include theoretical, practical, control materials);
- completeness of a statement;
- high extent of visualization (i.e. contain illustrations, tables, etc.).

Training materials display the modern level and scientific achievements in the respective sphere.

UMK "Business planning" contains 11 multimedia slide lectures.

Multimedia slide lectures:

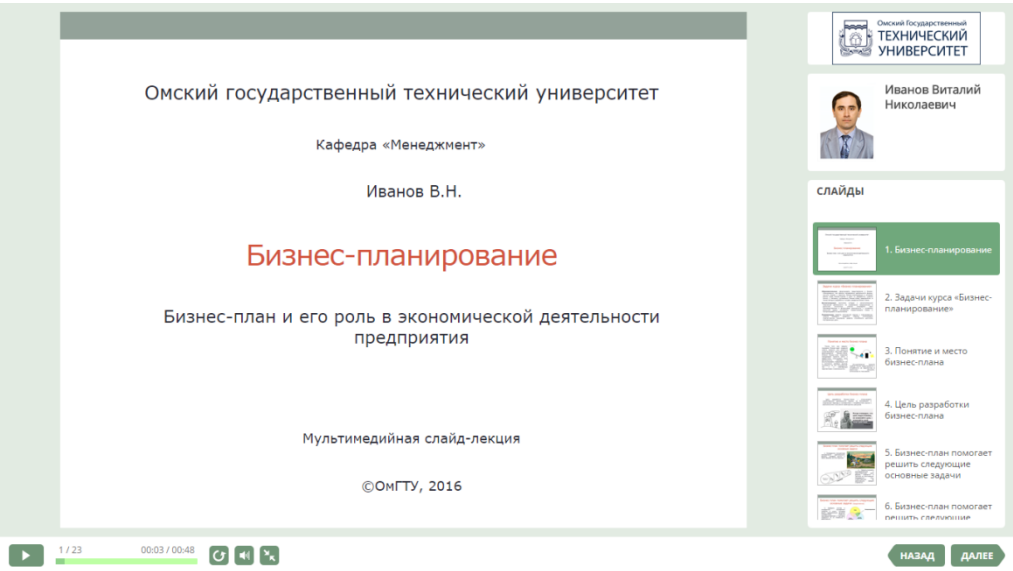



Fig. 1. An example of slide lecture in system in iSpring Suite 8

2.1. The multimedia slide lecture "The Business Plan and Its Role in Economic Activity" - 24,6 MB.

2.2. The multimedia slide lecture "Classification of Business Plans and Main Techniques of Business Planning" - 24,6 MB.

2.3. The multimedia slide lecture "Development Stages of the Business Plan and Strategic Planning of the Investment Project" - 17,1 MB.

2.4. The multimedia slide lecture "Analysis of the Market and Marketing Strategy of the Project" - 24,2 MB.

2.5. The multimedia slide lecture "Production plan" - 15,4 MB.

2.6. The multimedia slide lecture "Organizational Plan" - 17,0 MB.

2.7. The multimedia slide lecture "Legal Support of Activity of Firm" - 21,0 MB.

2.8. The multimedia slide lecture "Financial Plan" - 17,9 MB.

2.9. The multimedia slide lecture "Strategy and Organizational Forms of Financing of Projects" - 17,0 MB.

2.10. The multimedia slide lecture "Assessment of Efficiency of Business Projects" - 20,8 MB.

2.11. The multimedia slide lecture "Management of Design Risks" - 17,1 MB.

**Total: 216,7 MB.**

EUMK is approved in Omsk the state technical university on specialties of extramural studies.

As technical means for creation of components of multimedia UMK on discipline "Business planning" software products were used: Power Point, iSpring Suite 8. The main advantages of these tools is quality, ease and speed of the created materials.

**2. The used technical means**

2.1. The following equipment rooms and software are necessary for development of a multimedia educational and methodical complex for distance learning on discipline "Business planning":

1. Computer and AMD Phenom (tm) II processor.
2. Random access memory – 4096 MB.
3. Summary space on the hard drive of 1024 MB.
4. Color SVGA monitor of the computer resolution
1024x768 and above.
5. Operating system: Windows 7.
6. iSpring Suite 8.

2.2. The following equipment rooms and software are necessary for functioning of a multimedia educational and methodical complex for distance learning on discipline "Business planning" of the user:

When viewing on the computer:

7.Computer and Intel/AMD processor of 1 GHz or above.
8.Random access memory – 1024 MV.
9.Free space on the hard drive of 1024 MB.
10. Color SVGA monitor of the computer resolution 1024x768 and above.
11. Operating system: Windows XP/Vista/7/8, Macintosh, Linux.
12. Software: Internet Explorer 6 above, Mozilla Firefox 3.x above, Safari 3 above, Google Chrome, Opera 9.5 above, Adobe Flash Player 10.1 or above.

For viewing on mobile devices:

1. Mobile devices with resolution 480x320 and above.
2. Operating system: Mobile: Android 3.x or higher, iPad, iPad2, The New iPad (iOS 5.x or higher), Windows Phone 7.5 or higher, Windows RT.
3. The software for mobile devices. Desktop: Internet Explorer 9 or higher, Safari 5 or higher, Mozilla Firefox 12 or higher, Opera 11.6 or higher, Google Chrome 18 or higher.

**3. Special conditions of application and requirement of organizational, technical and technological character**

Application of an educational and methodical complex for distance learning on discipline "Business planning" is possible in the conditions of a modern educational computer class, and also on mobile devices of pupils at network placement of a complex with access on the Internet. The multimedia course is placed in a cloud service of iSpring Cloud and is available according to the reference https://ispri.ng/MYy2.

**4. Conditions of transfer and sale of program documentation**

Multimedia educational and methodical complex for distance learning on discipline "Business planning" and documentation to it can be transferred to the interested person or the organization on the basis of the contract with OMGTU and authors according to the current legislation.

# ELECTRONIC RESOURCES OF EDUCATIONAL APPOINTMENT (MAIN GENERAL EDUCATION)

## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic manual "Computer graphics" (direction: 010400.62 "Applied mathematics and informatics", 010500.62 "Software and administration of information systems"; level - a bachelor degree ")"

*Sterlitamak branch of federal public budgetary educational institution of the higher education "Bashkir state university"*

*Hasanova S.L., Rasskazova A.A.*

***UDC** 377.5*
***GRNTI** 14.33.09, 50.41.29*

**1. Functional purpose of the program, scope, its restrictions**

Development and use of the interactive information training systems at high school are one of components a component of informatization of school. The main goal of informatization is an improvement of quality of preparation of the new information technologies which are trained by means of introduction in educational and scientific processes, means of multimedia and telecommunications. The problem of informatization of secondary education consists that development and use of separate information technologies has to be one of components of stage-by-stage formation and development of the uniform information environment of educational institution.

Modern level of the computer equipment, fast development of the Internet open opportunities for creation of the information training environment as which understand a complex of the modern information technologies provided with the necessary methodical, program and technical means focused on training process. One of means of formation of the information training environment is creation of electronic educational and methodical complexes on disciplines, first of all natural-science and all-professional. Educational process is specified by types of occupations, specialties and subject domains or disciplines, in this regard priority of development and deployment of information technologies and objects of educational and educational and methodical appointment has paramount value. Thus, development of the electronic manuals (EM) is the conducting activity of the higher education institutions mastering remote education for today.

The computer graphics is a field of informatics which covers all parties of formation of images by means of the computer. Today means of computer graphics allow to create the realistic images which are not inferior to pictures. Also the software for obtaining images of the most various look and appointment - from simple drawings till realistic images of natural objects is created various hardware.

Studying of computer graphics, in present time, consists in development of bases of work with means of processing of images. Need of development of this EUP "Computer graphics" is defined by large volume of not systematized information on studying of computer graphics in education. This subject is insufficiently well considered not only in a school course of informatics and ICT, but also in educational and educational process in general though is one of the demanded and perspective directions. The developed textbook excludes these shortcomings, systematizes and structures information of this area.

EUP "Computer graphics" represents the electronic educational resource intended for the trained high schools of information and physical and mathematical profile.

One of criteria of quality of education is compliance of content of education to a modern level of development of science. Ensuring this criterion of education at school defines also requirements to content of the studied material.

The main software which are supposed to be used in the conceived grant for formation of concepts and demonstration of technologies of computer graphics is the program system for creation and editing three-dimensional graphics and animation 3D MAX. This program, according to authors, most corresponds to current trends of development of computer graphics. And also one of high-level programming systems, for formation of skills of program formation of the image.

At introduction of concepts, as a rule, by authors the sequence of a statement of material from the general to the particular was chosen, generic and specific terms were compared, it was emphasized in what features of narrower concepts are shown.

As the concepts "coding of color", "color model" are important concepts of computer graphics, authors referred studying of these definitions in the beginning of a course that allows to use these means throughout all course and to create rather steady skills of possession of appropriate technologies.

The offered course by authors included extensive material for carrying out practical works in Turbo Pascal and 3D MAX. The system of lessons aimed not only on studying of the specific program, but also on formation of skills of its use at creation of various images is developed.

The electronic grant is the most available and simple in use. Well issued and conveniently presented material which can be received without participation of the teacher promotes fast assimilation of knowledge, their fixing, and also increases interest in a subject.

If necessary the maintenance of a grant can be added, the interface and design are improved.

**UEP "Computer graphics"**

**1.1. Structure of UEP "Computer graphics"**

EUP "Computer graphics" (fig. 1) in an architectural form represents the interactive environment.

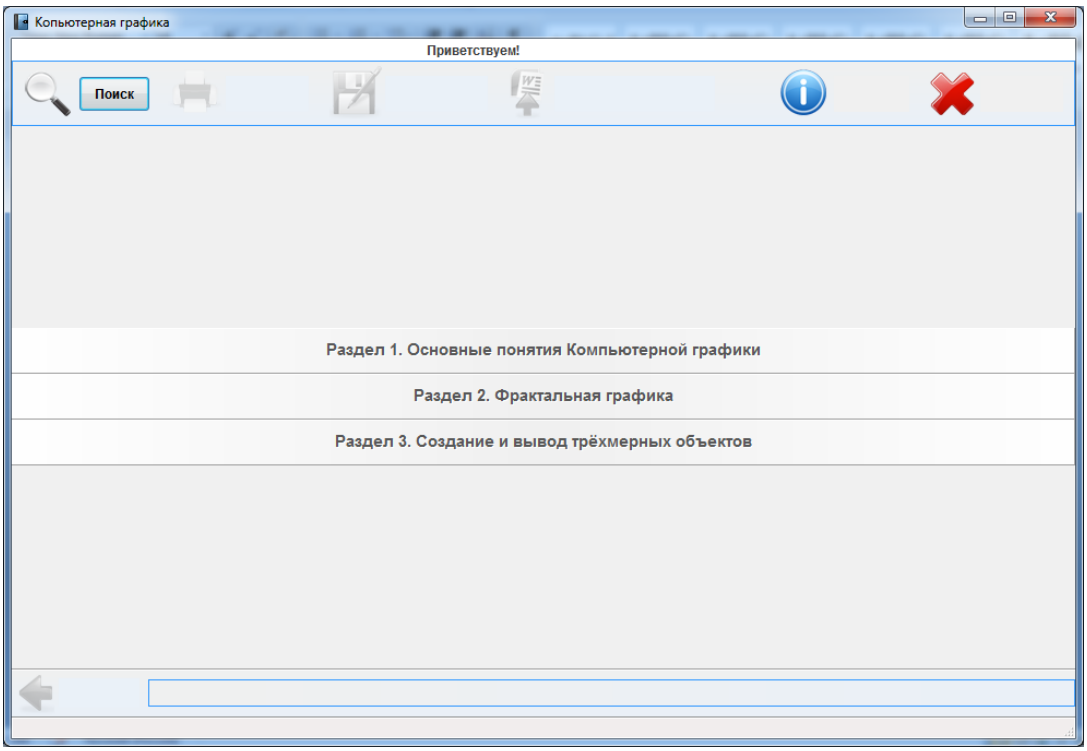



Fig. 1. EUP "Computer graphics"

The electronic grant consists of three sections:

- Basic concepts of computer graphics;
- Fractal graphics;
- Creation and conclusion of three-dimensional objects.

All theoretical material is systematized (it is broken into separate chapters and paragraphs). In the section "Creation and Conclusion of Three-dimensional Objects" examples of creation of the image are reviewed, starting with the most elementary and finishing with difficult objects.

**Structure of EUP "Computer graphics"**

1. Basic concepts of computer graphics

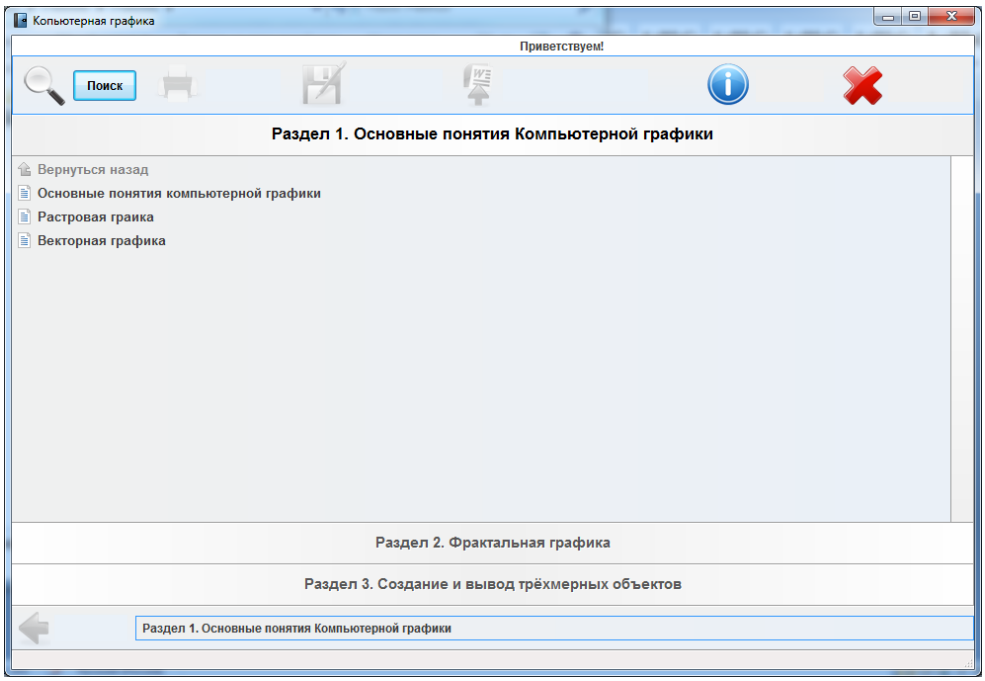



Fig. 2. Section 1. Basic concepts of computer graphics

2. Fractal graphics

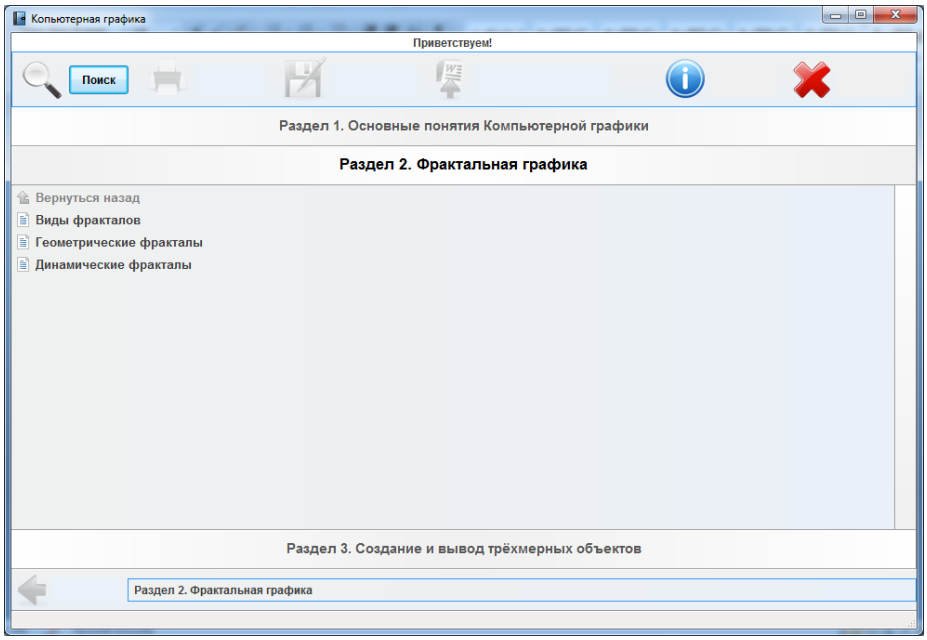



Fig. 3. Section 2. Fractal graphics

3. Creation and conclusion of three-dimensional objects

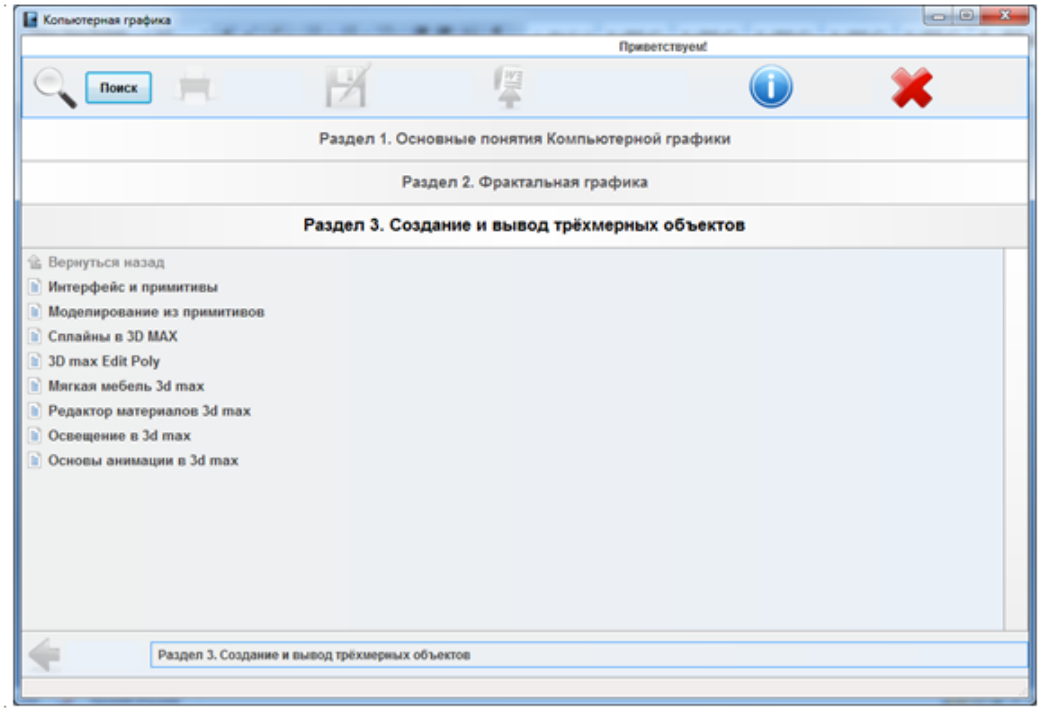



Fig. 4. Section 3. Creation and conclusion of three-dimensional objects

The grant is supplied with the hypertext references allowing to move quickly in the textbook and to find the interesting information. Also in a grant search in a keyword and in a template is realized

EUP "Computer graphics" meets requirements imposed to modern electronic grants namely:

1. Information on the chosen subject is well structured and represents the finished course fragments with limited number of new concepts.
2. To structural elements of a training course there correspond key subjects with the hypertext and illustrations.
3. In EUP the multiwindow interface when the information is provided in each window is used.
4. The text part is followed by the numerous cross references (hypertext) allowing to reduce time of search of necessary information.
5. EUP is not full analog of the printing edition; and possesses essentially new qualities in comparison with a traditional grant, uniting in itself computer and pedagogical technologies.

**1.2. Interface of working area**

The electronic grant is compiled by the Designer of Electronic Textbooks appendix. At start of the textbook "Computer графика.exe" on the screen there is the main page on which names of the main chapters of the textbook are displayed.

The interface of working area consists of three parts:

- Toolbar
- Main window
- Line of a state

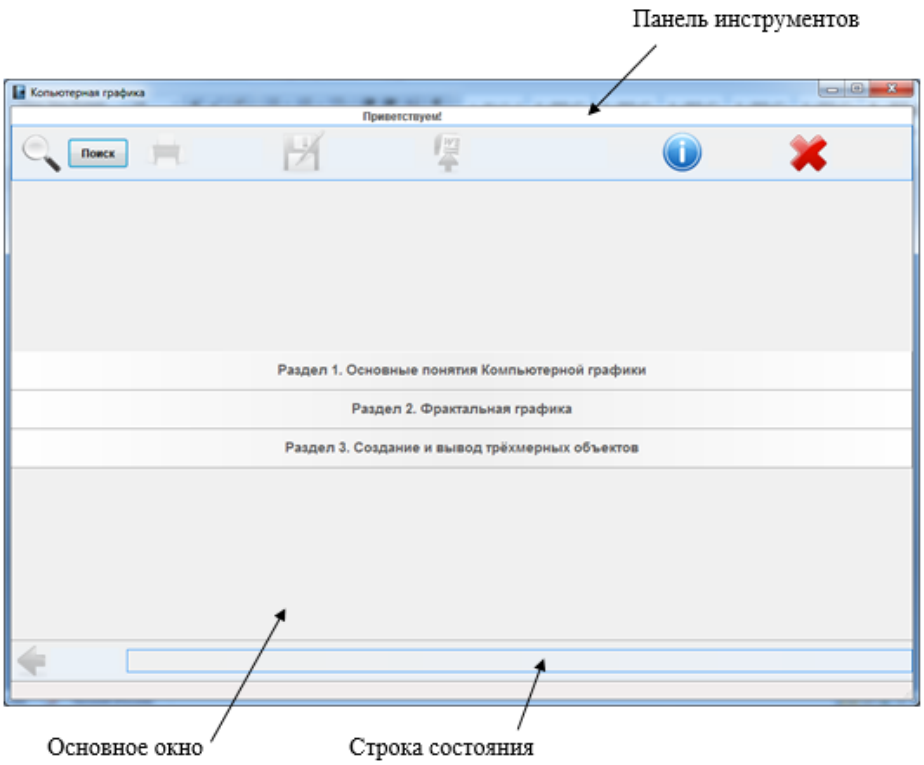



Fig. 5. Working area

The toolbar contains the name of an electronic grant "Computer graphics" and various action buttons (fig. 6)

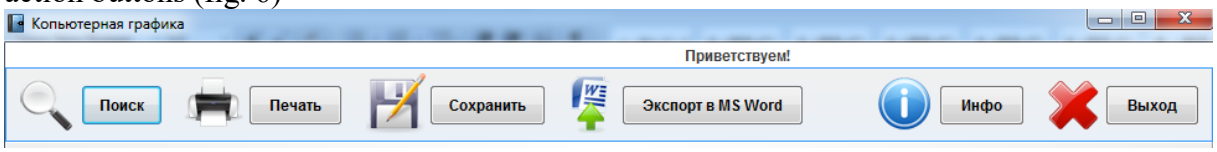



Fig. 6. Toolbar

On the main page in the main window the navigation menu is displayed, further in it all material which is contained in an electronic grant will be displayed. When pressing each section there is a submenu where all points of corresponding are listed took care.

The possibility of fast finding of the interesting information is realized in the section "Search" (Fig. 7)

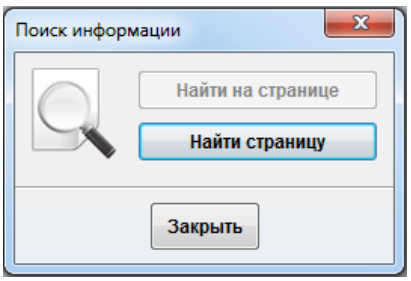



Fig. 7. Example of search

Search is organized, thus, in a search result, on the screen the list of pages on which coincidence was revealed will be output. Further the user can choose any displayed reference and look at contents of the banished part of the theory.

**2. The used technical means**

During creation of EUP "Computer graphics" the following software was used:

— Constructor_Electronic_books;

— 3D MAX.

**3. Special conditions of application and requirement of organizational, technical and technological character**

Normal work of UEP requires the following configuration of the computer:

— Pentium with a frequency of 100 MHz and above;
— free disk space not less than 2,22 MB;
— 16 RAM MB more;
— Windows XP operating system and subsequent versions.

**4. Conditions of transfer of program production or its sale**

Program documentation extends freely, the program on contractual conditions.

## ADVERTISING AND TECHNICAL DESCRIPTION "Educational and methodical grant "Of the equation of mathematical physics" (direction: 010400.62 "Applied mathematics and informatics", 010500.62 "Software and administration of information systems", 050100.62 "Pedagogical education"; a profile - a bachelor degree ")"

*Sterlitamak branch of Federal public budgetary educational institution of the higher education "Bashkir state university"*

*Sabitova YU.K.*

***UDC** 378*
***GRNTI** 14.35.07, 27.31.15*

**1. Functional purpose of a product, area of its application, its appointment**

The purpose of this grant is selection of material for a practical training on discipline of "The equation of mathematical physics". The necessity in such grant is caused by lack of the uniform book of problems covering all program material at this course.

The subject of the practical training given in a grant is made on lectures of professor K.B. Sabitov and his textbooks. Classical collections of tasks of discipline of "The equation of mathematical physics" of A.V. Bitsadze, D.F. Kalinichenko, V. S. Vladimirov, V.P. Mikhaylov are the basis for a grant.

The grant consists of 30 practical training. At the beginning of each occupation theoretical questions necessary for repetition of the main theorems, methods of the decision on an occupation subject are given. Further for fixing, digestion of material the main objectives and tasks for independent work are given. In a grant tasks for carrying out examinations and the list of examination questions are picked also up. At the end of a grant answers to tasks are given, to some of them are instructed.

The educational and methodical grant of "The equation of mathematical physics" is considered on Scientific and methodical Council of the Sterlitamak branch of BashGU of June 18, 2014, the protocol No. 5.

The educational and methodical grant of "The equation of mathematical physics" corresponds to the curriculum of training of bachelors in the following directions:

1) 050100.62 "Pedagogical education", profile: Mathematics, Informatics; profile: Mathematics, Physics; profile: Informatics;

2) 010400.62 "Applied mathematics and informatics", profile: Applied mathematics and informatics;

3) 010500.62 "Software and administration of information systems", Administration of Information Systems profile.

The discipline of "The equation of mathematical physics" belongs to a cycle of professional disciplines according to the State educational standard of higher education of the Federal component of the section B3.B.1.

The course "Equations of Mathematical Physics" studies mathematical problems of classical physics: mechanics, hydromechanics, acoustics, theory of potential and optics. Studying of this discipline is based on knowledge students of the general courses of linear algebra, the mathematical analysis, elements of the theory of the functional analysis, theory of functions of a

complex variable and the theory of the differential equations. The course "Equations of Mathematical Physics" is one of disciplines on the basis of which such disciplines as the theoretical mechanics, calculus mathematics, the theory and special courses connected with the qualitative theory of the differential equations in private derivatives of the mixed type are under construction.

The main attention is aware is given to consideration of the problems of mathematical physics connected with processes of distribution of waves, diffusions, heat conductivity and other phenomena. The simplest methods of the solution of tasks for the equations of mathematical physics – a method of characteristics (creation of the solution of a task of Cauchy for the string equation, Dalamber's formula), a method of division of variables or Fourier's method are studied (creation of the solution of an initial and boundary task for the equations of fluctuations of a string and heat conductivity, Dirikhle's task for Laplace and Poisson's equations in circular areas). Much attention is paid to physical interpretation of the received decisions. At implementation of the program of a course the basic concepts and offers are illustrated by examples and tasks.

On lecture occupations theoretical questions of discipline of "The equation of mathematical physics" are considered. A practical training allows to fulfill skills of the solution of initial, initial and boundary, boundary tasks for the equations of hyperbolic, elliptic and parabolic types by various methods.

Practical training is broken on the following subjects:

- the basic concepts about the equations of mathematical physics;
- the physical tasks leading to the equations with private derivatives, their classification;
- conclusion of the equation of fluctuations of a string and statement of the main initial and boundary objectives for the equations of hyperbolic type;
- conclusion of the equation of heat conductivity and statement of the main initial and boundary objectives for the equations of parabolic type;
- the tasks leading to Poisson and Laplace's equation and statement of the main boundary objectives;
- Cauchy's task and Cauchy-Kovalevskaya's theorem to know about correctly objective and to know examples of incorrect tasks;
- method of characteristics for creation of the solution of a task of Cauchy for the equation of a string and Dalamber's formula;
- method of division of variables for creation of the solution of an initial and boundary task for the equations of fluctuations of a string and heat conductivity;
- Dirikhle and Neumann's tasks for Laplace's equation in circular areas (in a circle, out of a circle, in a ring);
- Cauchy's task for the heat conductivity equation ( $n=1,\ n=2,\ n=3$ ).

As a result of training in this grant students will seize the following skills and abilities to lead to a canonical form a square form of the corresponding equation in private derivatives and to define its type; to build the common decision of the equations in private derivatives by method of characteristics; to remove the equations of fluctuations of a string, the equation of heat conductivity of a core; to solve Cauchy's problem for the equations of hyperbolic and parabolic types by method of characteristics; to solve initial and boundary problems for the equation of fluctuation of a string and the equations of heat conductivity by method of division of variables; to solve Dirikhle's problem for Laplace and Poisson's equations in circular areas by method of division of variables.

**2. The used technical means**

The electronic version of the manual works in a graphical operational environment of Windows. For acquaintance to the maintenance of a grant of rather personal computer to the Intel 486 processor above.

**3. Special conditions and requirements of organizational, technical and technological character**

Are not required.

**4. Conditions of transfer of program documentation or its sale**

Condition of transfer of this software product is the contract of purchase and sale signed between the Sterlitamak branch of the Bashkir state university and interested party.

## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic manual "Personnel Technologies in a Personnel Management System in Tables and Schemes" (direction: 38.03.03. - Human resource management, level – a bachelor degree; 38.04.01. – Economy, level – a magistracy)"

*VO FGBOU Sterlitamak branch Bashkir state university*
*Gabidullina G.R.*

***UDC** 378*
***GRNTI** 14.35.07, 06.77.59*

**1. Functional purpose of a product, scope, its appointment**

Modern conditions impose to activity of the organizations requirements for creation of the special personnel policy providing system effectiveness of human resource management as human resource management admits to one of the most important and difficult spheres of activity of the organization capable repeatedly today to increase its efficiency. It should be noted that management of people is key competence of managers of the 21st century in order that, the organization successfully coped with those tasks which face it, people with certain abilities, a profession, professional experience are necessary. It means that such people should be found at first in labor market, to estimate their professional, business and personal qualities, to make selection, to enter into structure of the organization and to provide such inclusion of their opportunities in achievement of the objectives of the organization which would be the most useful both for the organization, and for the person. In modern social and economic conditions the few domestic enterprises can consider own service of human resource management by the division meeting the modern requirements.

In human resource management the important place is taken by technologies which application allows to solve problems of staffing of strategy of the organization.

Application of personnel technologies is caused by the fact that in relation to abilities of the person in the organization it is necessary to make certain administrative actions which would allow:

1) it is timely to estimate the level of its qualification;
2) to move to a position or a workplace where its opportunities most fully could be, are demanded;
3) to provide interest in quality and the number of work.

Task of the present manual - to present modern personnel technologies which open the main aspects of work with personnel.

This electronic grant is characterized by the fact that on the submitted schemes, tables go at once explanations which supplement the data reflected in them.

In the manual modern technologies of human resource management of the organization are considered. Aspects of a set, selection, adaptation, training, performance appraisal of the

organizations are systematized. Such personnel technologies as planning of career and work with a reserve of heads are considered. The grant can be used for practical, classroom training and for independent work of students.

The manual is intended for the students studying human resource management and administrative consulting, the heads and experts working in HR departments.

**2. The used technical means**

The manual "Personnel Technologies in a Personnel Management System in Tables and Schemes" it is created with use of the software of Microsoft Office.

**3. Special conditions and requirements of organizational, technical and technological character**

Treat necessary conditions of application of the manual "Personnel Technologies in a Personnel Management System in Tables and Schemes": existence of the computer. Existence of the computer with WINDOWS XP/7/8 OS belongs to operating conditions of a resource.

**4. Conditions of transfer of documentation or its sale**.

Condition of transfer of this software product is the contract of purchase and sale signed between the Sterlitamak branch of the Bashkir state university and interested party.

## ADVERTISING AND TECHNICAL DESCRIPTION "Course "English for the Special Purposes". Bases of professional communication in English. Module "An English Course in Media Studies and Media Outlook on the Globe's Top Disputable Issues"

*Ministry of Education and Science of the Russian Federation*
*Halyutina M.E., Klyukina E.V.*

***UDC*** *378, 811*
***GRNTI*** *14.35.07, 16.41.21*

**1. Functional purpose of the course "An English Course in Media Studies and Media Outlook on the Globe's Top Disputable Issues", area of its application, its restriction.**

The training course of "An English Course in Media Studies and Media Outlook on the Globe's Top Disputable Issues" is developed for ensuring educational process on discipline of "A basis of professional communication in English" which accustoms students 2 and 3 courses of a bachelor degree of philological, historical, economic and politological offices within a basic part of the program of training to ISAA of Lomonosov Moscow State University.

**The educational purpose** of studying of the course "An English Course in Media Studies and Media Outlook on the Globe's Top Disputable Issues" within discipline of "A basis of professional communication in English" is further development and removal on new qualitative level (for the subsequent professional use) bases of earlier acquired communicative skills by improvement, gradual complication and training of the main language competences of reading, hearing, speaking and the letter. Besides the educational purposes the course sets before itself **the purposes of the common cultural and educational** plan, i.e. expansion of outlook and formation of understanding of global tendencies and trends in close interrelation with each other; formation of the complete picture of the world conducting to understanding and understanding of relationships of cause and effect between the current events and their sources; formation of culture of interpersonal communication, and also the forms of etiquette interfaced to stay in the public place, corresponding to the educational environment and educational process. For achievement of the set educational objects the course of "English for the special purposes" solves the following **problems**: 1) expansion of a lexicon within the sections (Vocabulary Enhancement) offered by a course; 2) formation of competence of the correct

understanding, transfer of the main and detailed contents, a critical and analytical evaluation of the read English texts of scientific, publicistic and popular scientific styles of the speech in an oral and written form (Comprehension, Reading for Gist, Reading for Detail, Critical Analysis Skills; Writing Skills); 3) formation of competence of adequate transfer of the main contents of texts of articles from Russian into English in an oral and written form (Mediation Skill); 4) improvement of competences of the monological and dialogical speech of various communicative situations, from the prepared monological statement in the form of transfer of the main contents of the read material or the prepared report before spontaneous discussion within a subject matter (Speaking Skills); 5) improvement of competence of hearing on examples of original news messages, scientific, popular scientific, including speaking on various dialects of English, both native speakers, and foreigners (General Listening, Listening for Gist, Listening for Detail); development of competence of the prepared public statement with the report on the current events before audience or with the presentation on one of the offered subjects (Public Presentation Skills).

The training course consists of 9 Lessons (Units) devoted to questions of studying of information space both from the cultural and public point of view, and from philological. Mass media which on modern a stage treat not only television, radio, newspapers, but also the Internet, social networks, a blogosphere, and also various information carriers, are studied within a course as the representatives of "fourth estate" capable to exert huge impact on public opinion, public moods, formation of image of this or that state on the world scene and also as the instrument of promotion and a manipulation public consciousness. The material which is selected for course Lessons raises the most important and burning questions which are taken up by mass media on pages of the print media, in news blocks, in radio - and TV current show, in comments to professional and amateur blogs, etc.

**The original concept of this course** consists in symbiosis of two educational purposes: 1) studying of English on examples text, Audi - and video records scientific and newspaper publicistic styles of the speech; 2) comprehensive study of materials in fact, i.e. consideration of various points of view on the studied questions which are thematically subdivided into 3 parts: Part I Media Studies (Studying of information space), Part II Media Outlook on Political Issues (Illumination of political affairs by mass media), Part III Media Outlook on Social and Economic Issues (Illumination of social and economic problems by means of mass media). Thus, the course gives different wide range of the materials satisfying to various points of view on important questions of the present. This methodical reception is extremely important for formation of complete idea of the existing events and the phenomena, promotes development of critical thinking and acquisition of a complete view of things, events, a role of the states and persons in the history in the broadest sense. Text material – **publications** of the following editions is attracted to development of Lessons (Units) of a course: New Yorker, Sun, Economist, the Daily Telegraph, New Scientist, the New York Times, Guardian, Chronicle, Forbes, Washington Times, Nation, Foreign Policy Journal, Foreign Affairs, Daily Beast, Ahlulbayt TV, Renewable Energy magazine, Food and Agriculture Organisation of the UN, Scientific American.

Along with the informative party of materials, the important place is taken by the language party. The studied materials serve as speech examples of scientific and journalese styles of the speech which are an integral part of studying of all style variety of English in general. English in this part is the instrument of communication and laws of functioning of this "tool" are also subject to studying. Thus, the course unites in itself two global purposes: studying of English on the original and specially selected examples of scientific and journalese styles of the speech and studying of the most inconsistent problems of mankind about which write mass media.

**The course includes the following parts**:

Part I Media Studies

Unit I Newspapers, Media, Journalism

Unit II Headline English

Part II Media Outlook on Political Issues
Unit III Global Politics and International Relations
Unit IV Wars and Conflicts, Warfare and Deterrence
Unit V Terrorism and Opposition
Part III Media Outlook on Social and Economic Issues
Unit VI Climate and Weather, Ecology and Pollution
Unit VII Renewables and Alternatives
Unit VIII Technology and Technological Advancement
Unit IX Health, Food, Nutrition
Appendix 1
Appendix 2
Appendix 3
Bibliography

The training course of "An English Course in Media Studies and Media Outlook on the Globe's Top Disputable Issues" has modular structure. Thematically the course is divided into three components. Each Lesson of each part has formal and identical structure at which all materials are grouped in five sections in types of speech activities or for the micro competences necessary for development and training of this or that competence. An exception is Unit II Headline English which is devoted to studying of the language phenomena of publicistic style of the speech, namely typical lexicon, grammar, stylistic receptions which are characteristic of writing of newspaper headings.

Typical structure of the Lesson (Unit) following:

**Section I: Content Study and Vocabulary Enhancement.** In this section the heading text which represents a speech model of functioning of one of above-mentioned styles of the speech is studied. On its example lexical units necessary for studying are allocated and one of the typical grammatical phenomena is considered. The section offers exercises on training of lexicon and grammar. For development of competence of speaking exercises for discussion of contents of the text are offered. Micro competence of the dialogical speech is fulfilled through question-answer work, micro competence of the monological speech trains through summation of contents with the set detail degree.

**Section II: Reading and Critical Thinking Skills Development**. The second section of the Lesson sets as the purpose intensive reading the original materials devoted to the existing points of view on understanding and lighting in mass media of this or that subject, for example "The international relations". The exercises offered after each text are directed to stimulation of critical evaluation read, to development of the understanding of an essence written and formation of ability of an independent statement with different degree of a detail, using the allocated "active" lexical units.

**Section III Listening Skills Development**. The third section of a course contains exercises on development of competence of hearing, micro competences of hearing for full understanding and hearing for understanding of details. The training material of this section is constructed with use **of the video records** posted in free access on the specialized websites or on the You Tube resource, the following news agencies: FORA TV, Economist, Guardian, Evening Standard, London School of Economics and Political Science, Woodrow Wilson Centre, Atlantic, Council on Foreign Relations, BBC, Advancing Science Serving Society, National Geographic, European Community for Renewable Energy, Scottish Low Carbon Investment Conference, United Nations, CNN, Euro News, Indian Diplomacy, Creators Project, American Association for the Advancement of Science, Science magazine and others.

**Section IV Mediation and Writing Skills Development**. In this section the materials necessary for training of micro competence of summarizing or transfer of the contents of article from Russian into English, with use of "active" lexicon in an oral or written look are picked up. Articles translated to Russian and information materials from the following resources were sources for exercises of the section: Reuters, Nation, Business Insider, Guardian, Corriere della

Sera, Le Figaro, Time, Independent, the Daily Mail, etc. Other micro competence which development exercises are assumed in this section is writing of one of types of the essay, for example, of expository essay (essay explanation), process essay (the essay – the description of process), classification essay (the essay – classification), cause/effect essay (the essay – the description of relationships of cause and effect), etc.

**Section V Test Assignments**. The last section of the Lesson sets as the purpose control of the studied material and a task for carrying out independent researches. In this section exercises on check of lexical material are offered, subjects of the oral presentations on subject of the studied material are given. These exercises are focused on judgment of the studied material and stimulation at students of own research activity.

Besides the main materials in a training course there are additional materials presented in the form of three appendices - Appendix 1, Appendix 2, Appendix 3. Also there is a full bibliography of all used resources, articles, reference materials made according to the following sections: publications and news resources; reference resources and dictionaries; list of video-and audio - resources; list of publications in Russian. The bibliography is issued according to requirements of GOST imposed to bibliographies.

All materials collected and developed in a training course by "An English Course in Media Studies and Media Outlook on the Globe's Top Disputable Issues" are intended both for independent studying, and for a practical training in audience.

The training course represents a practical and methodical grant on studying of "English for the special purposes of mass media" on a communicative platform. Each Unit assumes studying during 5-6 occupations or 10-12 class periods. This course can be taught with intensity one or 2 times a week. Depending on the level of preparation and efficiency of group material of each Lesson (Unit) can be taught, making a start from the narrow tasks facing each concrete group of students. Originators of a course consider this structure mobile and convenient since it allows the teacher to be guided easily in material, to vary and update it if necessary, relying on interest of group and its efficiency. Each Lesson (Unit) contains exercises and tasks for improvement and training of all main competences (reading, the letter, speaking, hearing), according to the above-designated purposes and tasks.

The materials presented in a grant there passed approbation in practice, in the course of carrying out a practical training at the rate "Bases of Professional Communication in English".

Materials of the course "An English Course in Media Studies and Media Outlook on the Globe's Top Disputable Issues" are issued in the form of the electronic textbook which is the text file, with a total amount of 4,14 MB or 241 pages.

On the first page of the electronic textbook the information about authors-developers, the name of educational institution and department at which the textbook is created the full name of a course, year and the place of creation are submitted. The following page represents the summary to the textbook, on the third page – full contents with the indication of pages of an arrangement of each Lesson, notes and bibliographies.

The built-in means of navigation – a scrolling strip – allows to move freely on all material of a course and to find the interesting information. Availability and simplicity of navigation does not demand special preparation, allowing to concentrate attention of students and teachers on the content of the offered material.

**2. The used technical means**

The program can be realized on computers of any system under control of any operating system having appendices for reading text documents.

Minimum system requirements, following, necessary for full functioning:

- Windows 2000/ME/XP/Vista/7/8/8.1 operating system;
- clock frequency of the processor is not lower than 1 GHz;
- the volume of random access memory is not less than 256 MB;
- the video card has to include video memory not less than 64 MB;
- browser Internet Explorer, Google Chrome, Mozilla Firefox;

- display resolution not lower than 800x600;
- total amount 4 kbt.

Loading of a course requires existence of connection of the computer to the Internet and access to a local network if the resource is on a network disk. If the resource is on an external disk, then it is necessary connections of the Flash-store and external Hard Disk Drive.

**3. Special conditions and requirements of organizational, technical and technological character**

No special conditions and requirements, except the system requirements specified in minimum, to this document are shown.

**4. Conditions of transfer of program production or its sale**

Condition of transfer of this product is the contract of purchase and sale signed by Halyutina M. E. authors. and Klyukina E.V. and interested party.

## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic manual "Syntax. Punctuation" (direction: 44.03.01 – Pedagogical education; level - a bachelor degree)"

*Sterlitamak branch of federal public budgetary educational institution of the higher education "Bashkir state university"*

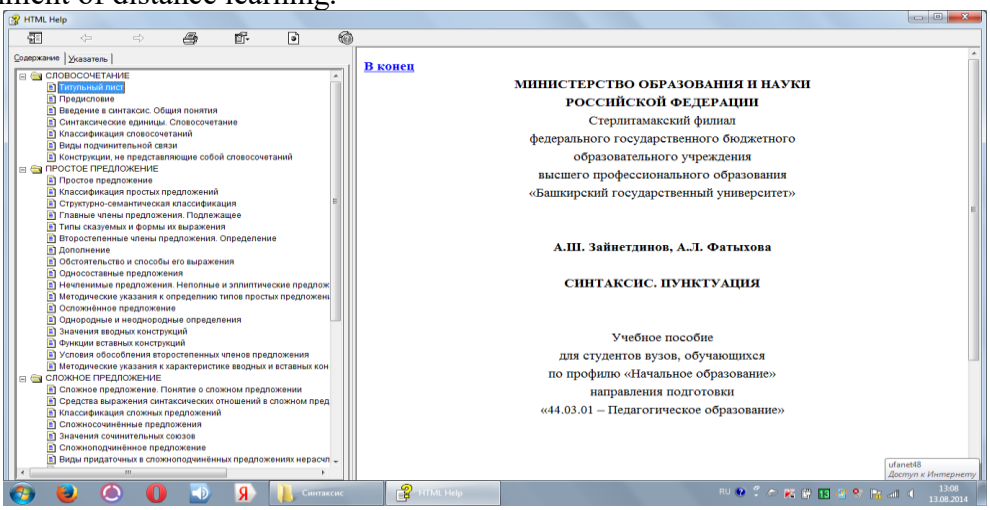
*Zajnetdinov A.SH., Fatyhova A.L.*

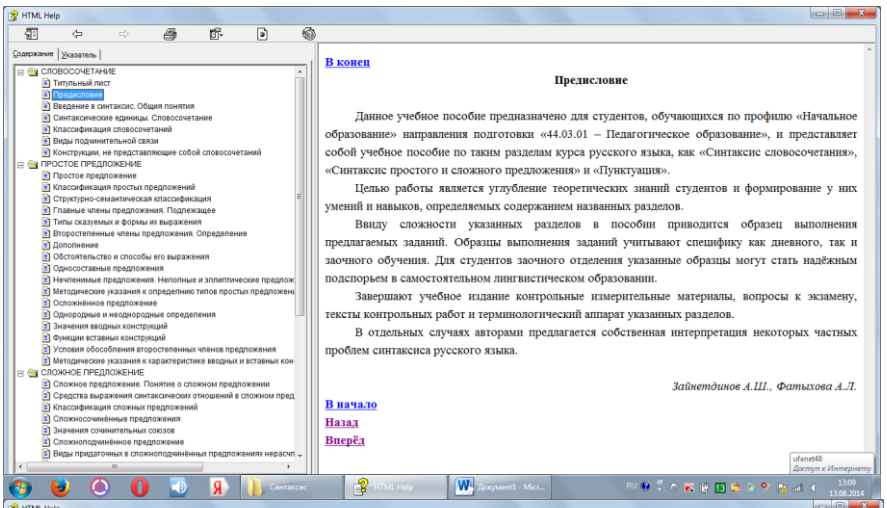
***UDC** 378*
***GRNTI** 14.35.07, 16.41.21*

**1. Functional purpose of the electronic textbook, area of its application and restriction**

The electronic textbook on discipline (EU) is aimed at optimization of educational process in higher education institution, creation of conditions for achievement of necessary level of modern education and versatile development of the identity of trained. EU is developed according to the federal state educational standard of the direction of preparation "Pedagogical education" (Primary education profile) and working criteria of the corresponding training course.

This electronic textbook can be considered as part of the means and programs applied in the environment of distance learning.

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Дополнение
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В конец
Предисловие
Данное учебное пособие предназначено для студентов, обучающихся по профилю «Начальное образование» направления подготовки «44.03.01 – Педагогическое образование», и представляет собой учебное пособие по таким разделам курса русского языка, как «Синтаксис словосочетания», «Синтаксис простого и сложного предложения» и «Пунктуация».
Целью работы является углубление теоретических знаний студентов и формирование у них умений и навыков, определяемых содержанием названных разделов.
Ввиду сложности указанных разделов в пособии приводится образец выполнения предлагаемых заданий. Образцы выполнения заданий учитывают специфику как дневного, так и заочного обучения. Для студентов заочного отделения указанные образцы могут стать надёжным подспорьем в самостоятельном лингвистическом образовании.
Завершают учебное издание контрольные измерительные материалы, вопросы к экзамену, тексты контрольных работ и терминологический аппарат указанных разделов.
В отдельных случаях авторами предлагается собственная интерпретация некоторых частных проблем синтаксиса русского языка.
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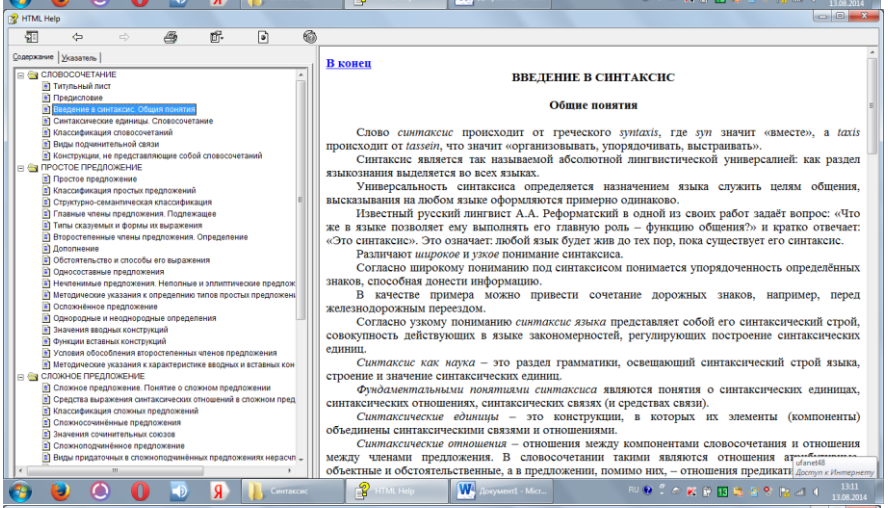
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ВВЕДЕНИЕ В СИНТАКСИС
Общие понятия
Слово синтаксис происходит от греческого syntaxis, где syn значит «вместе», а taxis происходит от tassein, что значит «организовывать, упорядочивать, выстраивать».
Синтаксис является так называемой абсолютной лингвистической универсалией: как раздел языкознания выделяется во всех языках.
Универсальность синтаксиса определяется назначением языка служить целям общения, высказывания на любом языке оформляются примерно одинаково.
Известный русский лингвист А.А. Реформатский в одной из своих работ задаёт вопрос: «Что же в языке позволяет ему выполнять его главную роль – функцию общения?» и кратко отвечает: «Это синтаксис». Это означает: любой язык будет жив до тех пор, пока существует его синтаксис.
Различают широкое и узкое понимание синтаксиса.
Согласно широкому пониманию под синтаксисом понимается упорядоченность определённых знаков, способная донести информацию.
В качестве примера можно привести сочетание дорожных знаков, например, перед железнодорожным переездом.
Согласно узкому пониманию синтаксис языка представляет собой его синтаксический строй, совокупность действующих в языке закономерностей, регулирующих построение синтаксических единиц.
Синтаксис как наука – это раздел грамматики, освещающий синтаксический строй языка, строение и значение синтаксических единиц.
Фундаментальными понятиями синтаксиса являются понятия о синтаксических единицах, синтаксических отношениях, синтаксических связях (и средствах связи).
Синтаксические единицы – это конструкции, в которых их элементы (компоненты) объединены синтаксическими связями и отношениями.
Синтаксические отношения – отношения между компонентами словосочетания и отношения между членами предложения. В словосочетании такими являются отношения
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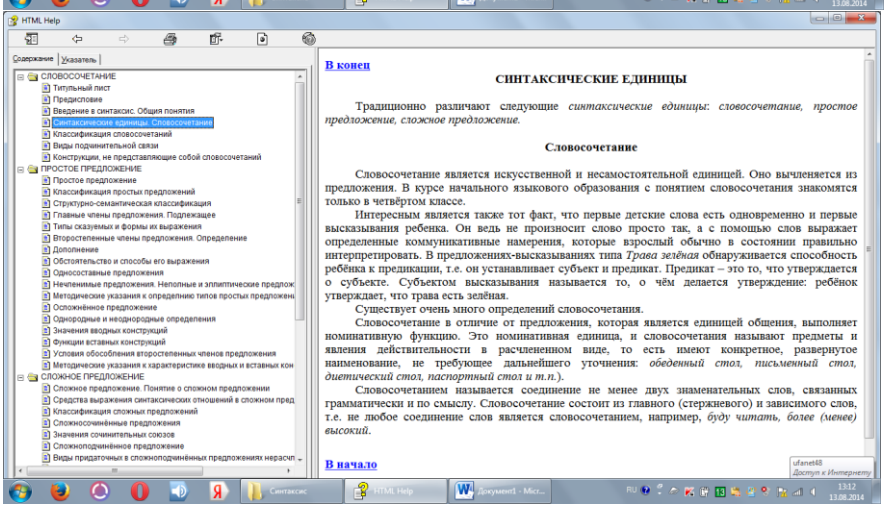
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В конец
СИНТАКСИЧЕСКИЕ ЕДИНИЦЫ
Традиционно различают следующие синтаксические единицы: словосочетание, простое предложение, сложное предложение.
Словосочетание
Словосочетание является искусственной и несамостоятельной единицей. Оно вычленяется из предложения. В курсе начального языкового образования с понятием словосочетания знакомятся только в четвёртом классе.
Интересным является также тот факт, что первые детские слова есть одновременно и первые высказывания ребенка. Он ведь не произносит слово просто так, а с помощью слов выражает определенные коммуникативные намерения, которые взрослый обычно в состоянии правильно интерпретировать. В предложения-высказываниях типа Трава зелёная обнаруживается способность ребёнка к предикации, т.е. он устанавливает субъект и предикат. Предикат – это то, что утверждается о субъекте. Субъектом высказывания называется то, о чём делается утверждение: ребёнок утверждает, что трава есть зелёная.
Существует очень много определений словосочетания.
Словосочетание в отличие от предложения, которая является единицей общения, выполняет номинативную функцию. Это номинативная единица, и словосочетания называют предметы и явления действительности в расчлененном виде, то есть имеют конкретное, развернутое наименование, не требующее дальнейшего уточнения: обеденный стол, письменный стол, диетический стол, паспортный стол и т.п.).
Словосочетанием называется соединение не менее двух знаменательных слов, связанных грамматически и по смыслу. Словосочетание состоит из главного (стержневого) и зависимого слов, т.е. не любое соединение слов является словосочетанием, например, буду читать, более (менее) высокий.
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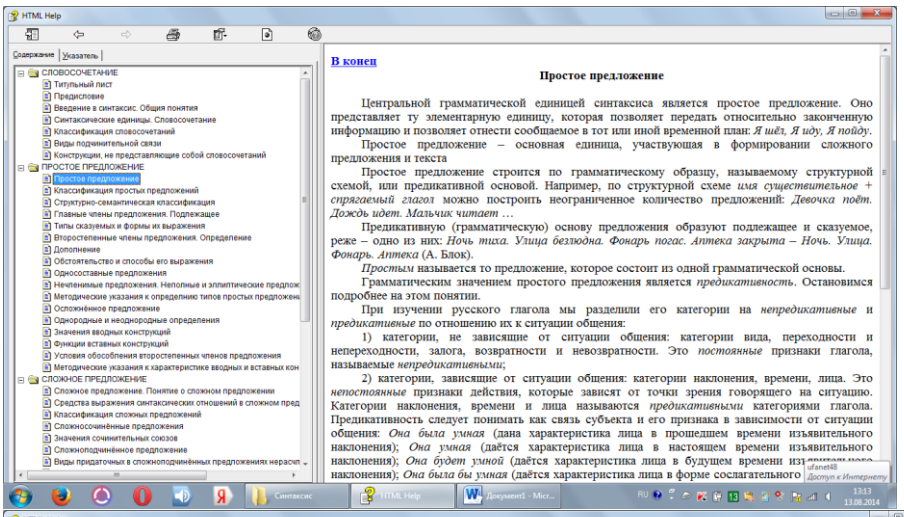


В конец

**Простое предложение**

Центральной грамматической единицей синтаксиса является простое предложение. Оно представляет ту элементарную единицу, которая позволяет передать относительно законченную информацию и позволяет отнести сообщаемое в тот или иной временной план: *Я шёл, Я иду, Я пойду*.

Простое предложение – основная единица, участвующая в формировании сложного предложения и текста

Простое предложение строится по грамматическому образцу, называемому структурной схемой, или предикативной основой. Например, по структурной схеме *имя существительное + спрягаемый глагол* можно построить неограниченное количество предложений: *Девочка поёт. Дождь идет. Мальчик читает …*

Предикативную (грамматическую) основу предложения образуют подлежащее и сказуемое, реже – одно из них: *Ночь тиха. Улица безлюдна. Фонарь погас. Аптека закрыта – Ночь. Улица. Фонарь. Аптека* (А. Блок).

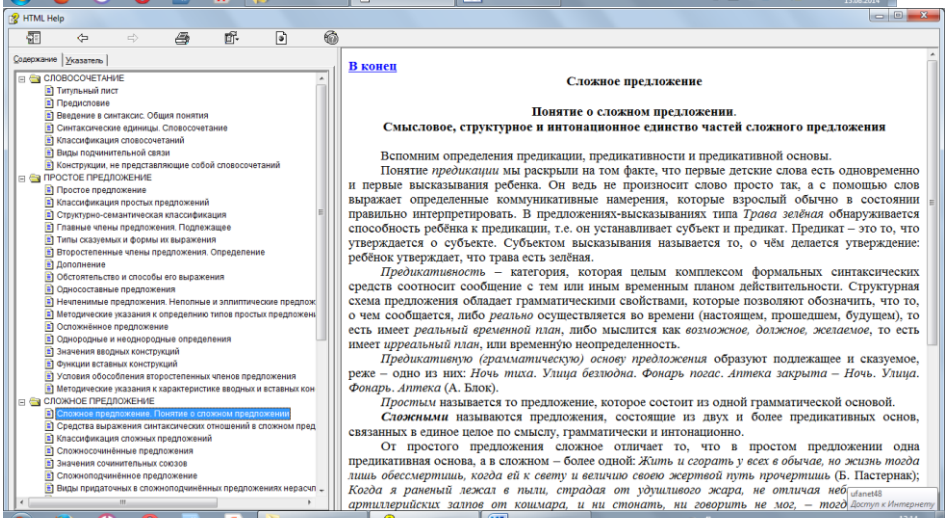
*Простым* называется то предложение, которое состоит из одной грамматической основы.

Грамматическим значением простого предложения является *предикативность*. Остановимся подробнее на этом понятии.

При изучении русского глагола мы разделили его категории на *непредикативные* и *предикативные* по отношению их к ситуации общения:

1) категории, не зависящие от ситуации общения: категории вида, переходности и непереходности, залога, возвратности и невозвратности. Это *постоянные* признаки глагола, называемые *непредикативными*;

2) категории, зависящие от ситуации общения: категории наклонения, времени, лица. Это *непостоянные* признаки действия, которые зависят от точки зрения говорящего на ситуацию. Категории наклонения, времени и лица называются *предикативными* категориями глагола. Предикативность следует понимать как связь субъекта и его признака в зависимости от ситуации общения: *Она была умная* (дана характеристика лица в прошедшем времени изъявительного наклонения); *Она умная* (даётся характеристика лица в настоящем времени изъявительного наклонения); *Она будет умной* (даётся характеристика лица в будущем времени изъявительного наклонения); *Она была бы умная* (даётся характеристика лица в форме сослагательного



В конец

**Сложное предложение**

**Понятие о сложном предложении.**
**Смысловое, структурное и интонационное единство частей сложного предложения**

Вспомним определения предикации, предикативности и предикативной основы.

Понятие *предикации* мы раскрыли на том факте, что первые детские слова есть одновременно и первые высказывания ребенка. Он ведь не произносит слово просто так, а с помощью слов выражает определенные коммуникативные намерения, которые взрослый обычно в состоянии правильно интерпретировать. В предложениях-высказываниях типа *Трава зелёная* обнаруживается способность ребёнка к предикации, т.е. он устанавливает субъект и предикат. Предикат – это то, что утверждается о субъекте. Субъектом высказывания называется то, о чём делается утверждение: ребёнок утверждает, что трава есть зелёная.

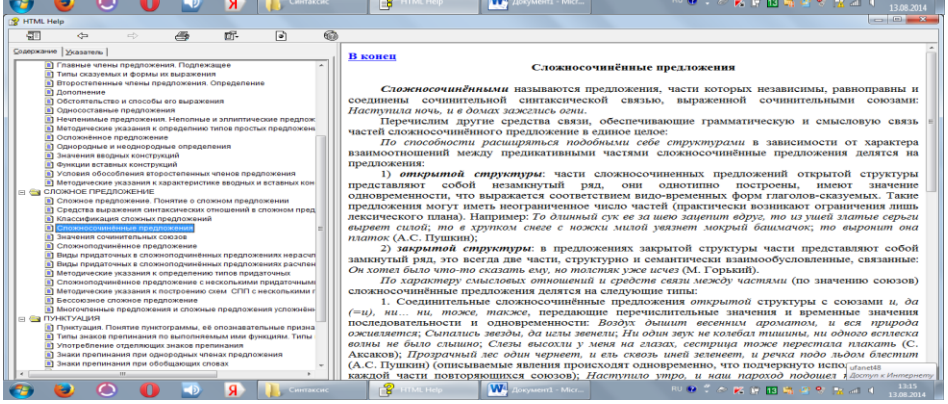
*Предикативность* – категория, которая целым комплексом формальных синтаксических средств соотносит сообщение с тем или иным временным планом действительности. Структурная схема предложения обладает грамматическими свойствами, которые позволяют обозначить, что то, о чем сообщается, либо *реально* осуществляется во времени (настоящем, прошедшем, будущем), то есть имеет *реальный временной план*, либо мыслится как *возможное, должное, желаемое*, то есть имеет *ирреальный план*, или временную неопределенность.

*Предикативную (грамматическую) основу предложения* образуют подлежащее и сказуемое, реже – одно из них: *Ночь тиха. Улица безлюдна. Фонарь погас. Аптека закрыта – Ночь. Улица. Фонарь. Аптека* (А. Блок).

*Простым* называется то предложение, которое состоит из одной грамматической основой.

***Сложными*** называются предложения, состоящие из двух и более предикативных основ, связанных в единое целое по смыслу, грамматически и интонационно.

От простого предложения сложное отличает то, что в простом предложении одна предикативная основа, а в сложном – более одной: *Жить и сгорать у всех в обычае, но жизнь тогда лишь обессмертишь, когда ей к свету и величию свою жертвой путь прочертишь* (Б. Пастернак); *Когда я раненый лежал в пыли, страдая от удушливого жара, не отличая неб артиллерийских залпов от кошмара, и ни стонать, ни говорить не мог, – тогд*



В конец

**Сложносочинённые предложения**

***Сложносочинёнными*** называются предложения, части которых независимы, равноправны и соединены сочинительной синтаксической связью, выраженной сочинительными союзами: *Наступила ночь, и в домах зажглись огни.*

Перечислим другие средства связи, обеспечивающие грамматическую и смысловую связь частей сложносочинённого предложения в единое целое:

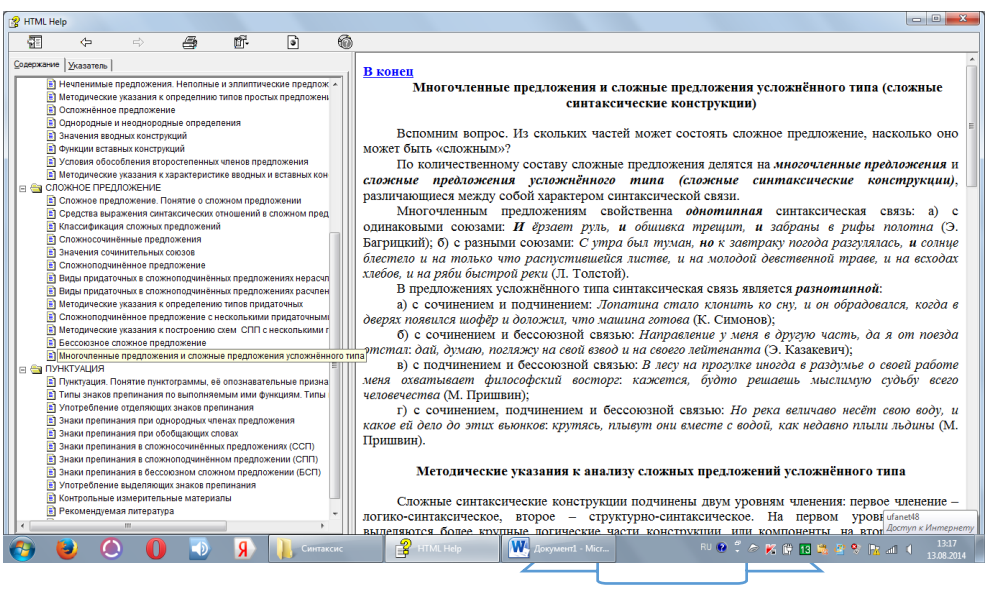
*По способности расширяться подобными себе структурами* в зависимости от характера взаимоотношений между предикативными частями сложносочинённые предложения делятся на предложения:

1) ***открытой структуры***: части сложносочиненных предложений открытой структуры представляют собой незамкнутый ряд, они однотипно построены, имеют значение одновременности, что выражается соответствием видо-временных форм глаголов-сказуемых. Такие предложения могут иметь неограниченное число частей (практически возникают ограничения лишь лексического плана). Например: *То длинный сук ев за шею зацепит вдруг, то из ушей златые серьги вырвет силой; то в хрупком снеге с ножки милой увязнет мокрый башмачок; то выронит она платок* (А.С. Пушкин);

2) ***закрытой структуры***: в предложениях закрытой структуры части представляют собой замкнутый ряд, это всегда две части, структурно и семантически взаимообусловленные, связанные: *Он хотел было что-то сказать ему, но тростяк уже исчез* (М. Горький).

*По характеру смысловых отношений и средств связи между частями* (по значению союзов) сложносочинённые предложения делятся на следующие типы:

1. Соединительные сложносочинённые предложения *открытой* структуры с союзами *и, да (=и), ни… ни, тоже, также*, передающие перечислительные значения и временные значения последовательности и одновременности: *Воздух дышит весенним ароматом, и вся природа оживляется; Сыпались звезды, да иглы звенели; Ни один звук не колебал тишины, ни одного всплеска волны не было слышно; Слезы высохли у меня на глазах, сестрица тоже перестала плакать* (С. Аксаков); *Прозрачный лес один чернеет, и ель сквозь иней зеленеет, и речка подо льдом блестит* (А.С. Пушкин) (описываемые явления происходят одновременно, что подчеркнуто испо каждой части повторяющихся союзов); *Наступило утро, и наш пароход подошел*



В конец

**Многочленные предложения и сложные предложения усложнённого типа (сложные синтаксические конструкции)**

Вспомним вопрос. Из скольких частей может состоять сложное предложение, насколько оно может быть «сложным»?

По количественному составу сложные предложения делятся на ***многочленные предложения*** и ***сложные предложения усложнённого типа (сложные синтаксические конструкции)***, различающиеся между собой характером синтаксической связи.

Многочленным предложениям свойственна ***однотипная*** синтаксическая связь: а) с одинаковыми союзами: ***И*** *ёрзает руль,* ***и*** *обшивка трещит,* ***и*** *забраны в рифы полотна* (Э. Багрицкий); б) с разными союзами: *С утра был туман,* ***но*** *к завтраку погода разгулялась,* ***и*** *солнце блестело и на только что распустившейся листве, и на молодой девственной траве, и на всходах хлебов, и на ряби быстрой реки* (Л. Толстой).

В предложениях усложнённого типа синтаксическая связь является ***разнотипной***:

а) с сочинением и подчинением: *Лопатина стало клонить ко сну, и он обрадовался, когда в дверях появился шофёр и доложил, что машина готова* (К. Симонов);

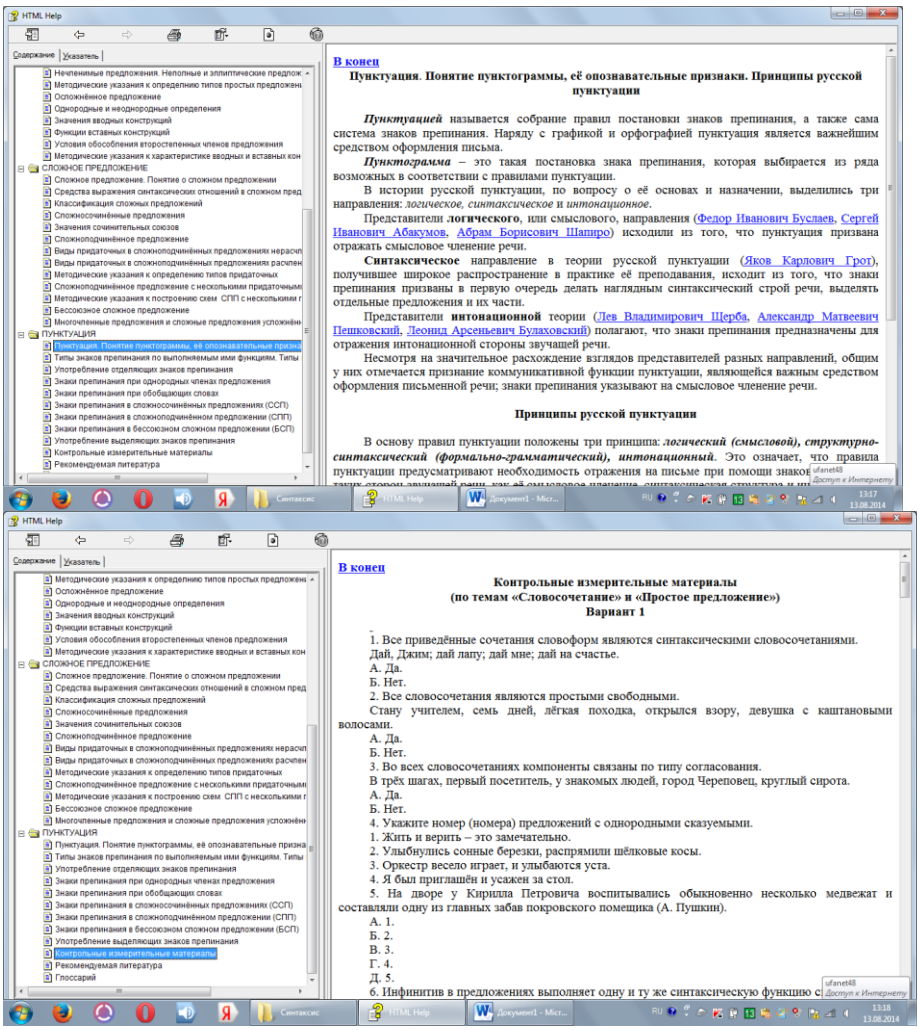
б) с сочинением и бессоюзной связью: *Направление у меня в другую часть, да я от поезда отстал: дай, думаю, погляжу на свой взвод и на своего лейтенанта* (Э. Казакевич);

в) с подчинением и бессоюзной связью: *В лесу на прогулке иногда в раздумье о своей работе меня охватывает философский восторг: кажется, будто решаешь мыслимую судьбу всего человечества* (М. Пришвин);

г) с сочинением, подчинением и бессоюзной связью: *Но река величаво несёт свою воду, и какое ей дело до этих вьюнков: крутясь, плывут они вместе с водой, как недавно плыли льдины* (М. Пришвин).

**Методические указания к анализу сложных предложений усложнённого типа**

Сложные синтаксические конструкции подчинены двум уровням членения: первое членение – логико-синтаксическое, второе – структурно-синтаксическое. На первом уров выделяются более крупные логические части конструкции или компоненты на вто




Formation of competence of the professional personality within transition from traditional to a competence-based paradigm of arts education assumes development in students key (educational and intellectual) competences. According to the Federal state educational standard of higher education of the direction of preparation "Pedagogical education", a profile – "Primary education" the discipline "Russian" belongs to variable part of a professional cycle of disciplines.

For development of discipline "Russian" students use knowledge, abilities, skills created in the course of studying of the subject "Russian" at comprehensive school.

Development "Russian" of discipline is necessary base for studying of disciplines: "A technique of training in Russian and literary reading", "A workshop on the Russian spelling", passings of student teaching at school.

**Purpose of development of discipline**: formation of the systematized knowledge of the main regularities of modern Russian taking into account the maintenance of specifics of teaching it at elementary school.

**Competences trained, the disciplines formed as a result of development.**

Process of studying of discipline "Russian" is directed to formation of the following competences:

1) **common cultural**:

– owns culture of thinking, it is capable to generalization, the analysis, perception of information, statement of the purpose and the choice of ways of its achievement (OK-1);

– it is capable to build logically truly oral and written language (OK-6);

– it is capable to use skills of the public speech, conducting discussion and polemic (OK-16);

2) **professional**:

– it is capable to use the systematized theoretical and practical knowledge of humanitarian, social and economic sciences at the solution of social and professional tasks (OPK-2);

– owns bases of speech professional culture (OPK-3);

– it is capable to preparation and editing texts of professional and socially important contents (OPK-6).

**As a result of studying of discipline the student has to:**

**nobility:**

– Russian in system;

– norms of the Russian literary pronunciation, word usage, grammar;

– basic theoretical concepts of sections of linguistics;

**to be able:**

– to analyze linguistic units of all levels: phonetic, graphic, lexical, word-formation, grammatical;

– to correlate the studied material to the program for Russian for initial classes;

– to use explanatory dictionaries, dictionaries of synonyms, antonyms, homonyms and other orthological reference books;

– to build the speech according to standards of the modern Russian literary language.

**to own:**

– skills of practical analysis of units of all language levels.

The manual is directed to formation of the specified competences, knowledge, skills.

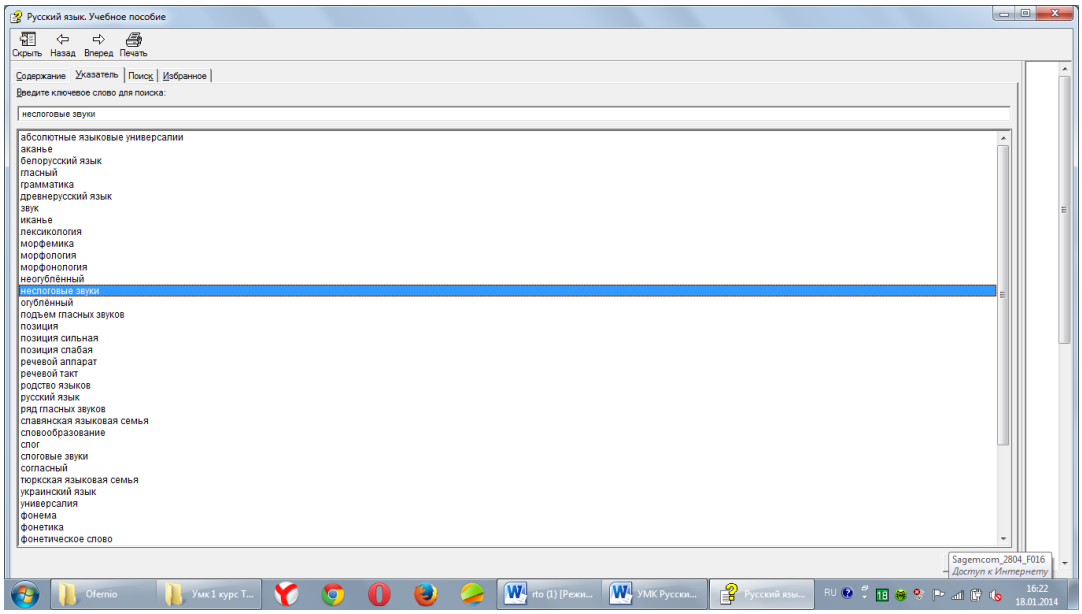
**2. Structure, operating modes and conditions of application of the electronic textbook**

The electronic textbook is created with use of the HTML Help Workshop html-editor and consists of the sections caused by pourovnevy representation of language: introductions to syntax, syntax of the phrase, syntax of a simple and compound sentence, and also the glossary according to the specified sections of a course.

The nodal subjects of a course necessary for formation of special competences of students at studying of discipline by them "A technique of training in Russian and literary reading" found reflection in a grant.

The order and sample of the language analysis of the corresponding linguistic units are given in each section of the edition.

The textbook is supplied with the index, trained can also use a search engine on the basis of the glossary.




This grant is developed for formation of basic knowledge, skills. At the same time the textbook can be used both at independent studying of discipline, and on occupation under the leadership of the teacher when studying material.

Transition between sections is made by click of a mouse on the corresponding menu item, and also use of hyperlinks between files in the textbook. Availability and simplicity of the interface does not demand special preparation. Material is added with graphic elements that promotes information saturation and expressiveness, allowing to concentrate attention trained on the content of the offered material, increases interest in training and self-training. The electronic textbook opens an opportunity and new prospects for modernization of traditional techniques of teaching with use of modern achievements of science and technology.

The textbook assumes also existence of connection to the Internet, it is supplied with references to the known educational and encyclopedic resources and video hostings on which illustrative materials on the questions considered in the textbook.

**3. The used technical means**

For realization of this EU the HTML Help Workshop html-editor was used.

Minimum requirements: Intel Pentium 486 above, Windows XP above, 1024 Kb of free disk space.

**4. Conditions of transfer of program production or its sale**

Condition of transfer of this software product is the contract of purchase and sale signed between the Sterlitamak branch of the Bashkir state university and interested party.

## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic manual "Punctuation" (direction: 44.03.01 – Pedagogical education; level - a bachelor degree")"

*Sterlitamak branch of federal public budgetary educational institution of the higher education "Bashkir state university"*

*Zajnetdinov A.SH., Fatyhova A.L.*

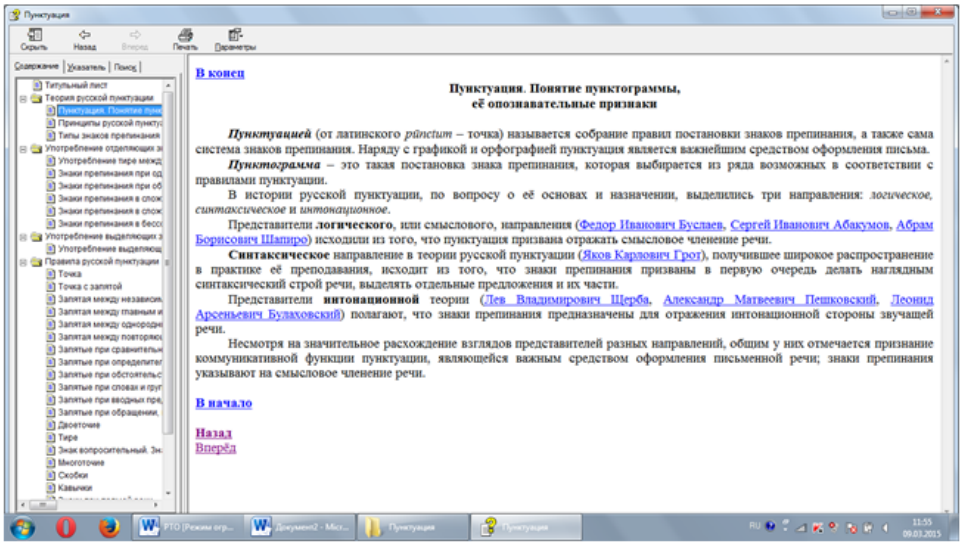
***UDC** 378*

***GRNTI** 14.35.07, 16.41.21*

**1. Functional purpose of the electronic textbook, area of its application and restriction**

The electronic textbook on discipline (EU) is aimed at optimization of educational process in higher education institution, creation of conditions for achievement of necessary level of modern education and versatile development of the identity of trained. EU is developed according to the federal state educational standard of the direction of preparation "44.03.01 – Pedagogical education" (Primary education profile) and working criteria of the corresponding training course.

This electronic textbook can be considered as part of the means and programs applied in the environment of distance learning.



В конец

**Пунктуация. Понятие пунктограммы,**
**её опознавательные признаки**

***Пунктуацией*** (от латинского *pūnctum* – точка) называется собрание правил постановки знаков препинания, а также сама система знаков препинания. Наряду с графикой и орфографией пунктуация является важнейшим средством оформления письма.

***Пунктограмма*** – это такая постановка знака препинания, которая выбирается из ряда возможных в соответствии с правилами пунктуации.

В истории русской пунктуации, по вопросу о её основах и назначении, выделились три направления: *логическое, синтаксическое* и *интонационное*.

Представители **логического**, или смыслового, направления (Федор Иванович Буслаев, Сергей Иванович Абакумов, Абрам Борисович Шапиро) исходили из того, что пунктуация призвана отражать смысловое членение речи.

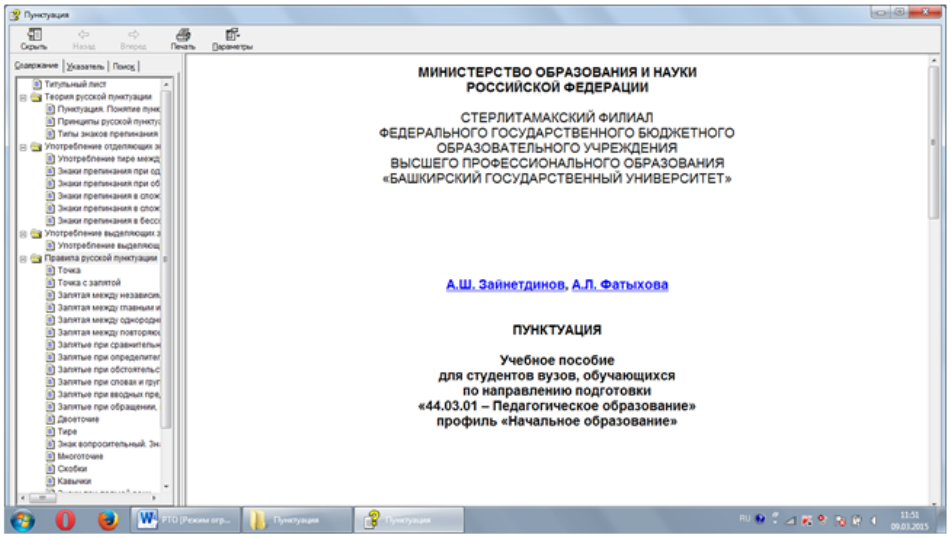
**Синтаксическое** направление в теории русской пунктуации (Яков Карлович Грот), получившее широкое распространение в практике её преподавания, исходит из того, что знаки препинания призваны в первую очередь делать наглядным синтаксический строй речи, выделять отдельные предложения и их части.

Представители **интонационной** теории (Лев Владимирович Щерба, Александр Матвеевич Пешковский, Леонид Арсеньевич Булаховский) полагают, что знаки препинания предназначены для отражения интонационной стороны звучащей речи.

Несмотря на значительное расхождение взглядов представителей разных направлений, общим у них отмечается признание коммуникативной функции пунктуации, являющейся важным средством оформления письменной речи; знаки препинания указывают на смысловое членение речи.

В начало

Назад
Вперёд



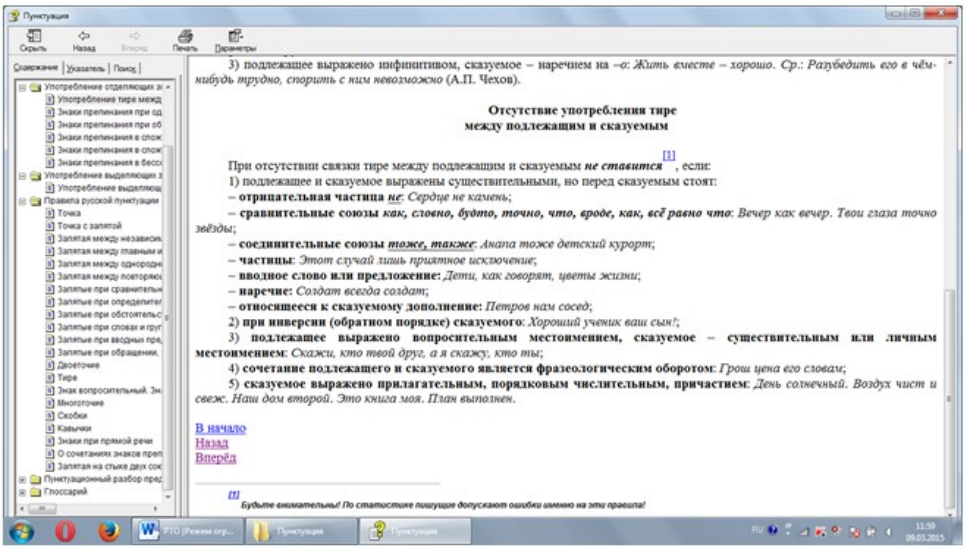
**МИНИСТЕРСТВО ОБРАЗОВАНИЯ И НАУКИ**
**РОССИЙСКОЙ ФЕДЕРАЦИИ**

СТЕРЛИТАМАКСКИЙ ФИЛИАЛ
ФЕДЕРАЛЬНОГО ГОСУДАРСТВЕННОГО БЮДЖЕТНОГО
ОБРАЗОВАТЕЛЬНОГО УЧРЕЖДЕНИЯ
ВЫСШЕГО ПРОФЕССИОНАЛЬНОГО ОБРАЗОВАНИЯ
«БАШКИРСКИЙ ГОСУДАРСТВЕННЫЙ УНИВЕРСИТЕТ»

А.Ш. Зайнетдинов, А.Л. Фатыхова

**ПУНКТУАЦИЯ**

**Учебное пособие**
**для студентов вузов, обучающихся**
**по направлению подготовки**
**«44.03.01 – Педагогическое образование»**
**профиль «Начальное образование»**



3) подлежащее выражено инфинитивом, сказуемое – наречием на *–о*: *Жить вместе – хорошо. Ср.: Разубедить его в чём-нибудь трудно, спорить с ним невозможно* (А.П. Чехов).

**Отсутствие употребления тире**
**между подлежащим и сказуемым**

[1]

При отсутствии связки тире между подлежащим и сказуемым ***не ставится***, если:

1) подлежащее и сказуемое выражены существительными, но перед сказуемым стоят:

– **отрицательная частица** ***не***: *Сердце не камень*;

– **сравнительные союзы** ***как, словно, будто, точно, что, вроде, как, всё равно что***: *Вечер как вечер. Твои глаза точно звёзды*;

– **соединительные союзы** ***тоже, также***: *Анапа тоже детский курорт*;

– **частицы**: *Этот случай лишь приятное исключение*;

– **вводное слово или предложение**: *Дети, как говорят, цветы жизни*;

– **наречие**: *Солдат всегда солдат*;

– **относящееся к сказуемому дополнение**: *Петров нам сосед*;

2) **при инверсии (обратном порядке) сказуемого**: *Хороший ученик ваш сын!*;

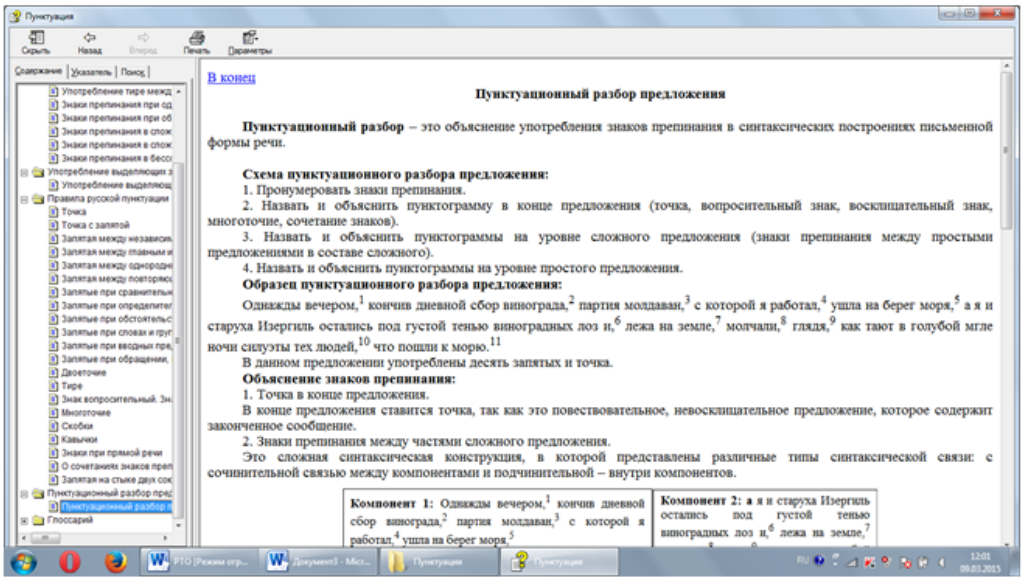
3) **подлежащее выражено вопросительным местоимением, сказуемое – существительным или личным местоимением**: *Скажи, кто твой друг, а я скажу, кто ты*;

4) **сочетание подлежащего и сказуемого является фразеологическим оборотом**: *Грош цена его словам*;

5) **сказуемое выражено прилагательным, порядковым числительным, причастием**: *День солнечный. Воздух чист и свеж. Наш дом второй. Это книга моя. План выполнен.*

В начало
Назад
Вперёд

[1]
*Будьте внимательны! По статистике пишущие допускают ошибки именно на эти правила!*




Formation of competence of the professional personality within transition from traditional to a competence-based paradigm of arts education assumes development in students key (educational and intellectual) competences. According to the Federal state educational standard of higher education of the direction of preparation "Pedagogical education", a profile – "Primary education" the discipline "Russian" belongs to variable part of a professional cycle of disciplines.

For development of discipline "Russian" students use knowledge, abilities, skills created in the course of studying of the subject "Russian" at comprehensive school.

Development "Russian" of discipline is necessary base for studying of disciplines: "A technique of training in Russian and literary reading", "A workshop on the Russian spelling", passings of student teaching at school.

**Purpose of development of discipline**: formation of the systematized knowledge of the main regularities of modern Russian taking into account the maintenance of specifics of teaching it at elementary school.

**Competences trained, the disciplines formed as a result of development.**

Process of studying of discipline "Russian" is directed to formation of the following competences:

1) **common cultural**:

– owns culture of thinking, it is capable to generalization, the analysis, perception of information, statement of the purpose and the choice of ways of its achievement (OK-1);

– it is capable to build logically truly oral and written language (OK-6);

– it is capable to use skills of the public speech, conducting discussion and polemic (OK-16);

2) **professional**:

– it is capable to use the systematized theoretical and practical knowledge of humanitarian, social and economic sciences at the solution of social and professional tasks (OPK-2);

– owns bases of speech professional culture (OPK-3);

– it is capable to preparation and editing texts of professional and socially important contents (OPK-6).

**As a result of studying of discipline the student has to:**

**nobility:**

– Russian in system;

– norms of the Russian literary pronunciation, word usage, grammar;

– basic theoretical concepts of sections of linguistics;

**to be able:**

– to analyze linguistic units of all levels: phonetic, graphic, lexical, word-formation, grammatical;

– to correlate the studied material to the program for Russian for initial classes;

– to use explanatory dictionaries, dictionaries of synonyms, antonyms, homonyms and other orthological reference books;

– to build the speech according to standards of the modern Russian literary language.

**to own:**

– skills of practical analysis of units of all language levels.

The manual is directed to formation of the specified competences, knowledge, skills.

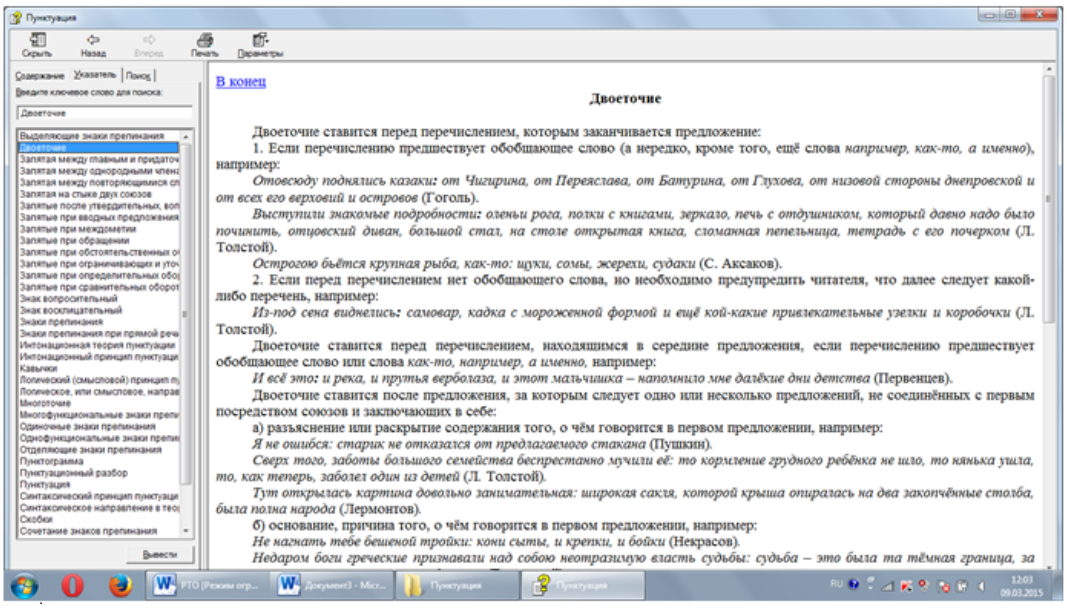
**2. Structure, operating modes and conditions of application of the electronic textbook**

The electronic textbook is created with use of the HTML Help Workshop html-editor and consists of the section "Punctuation", the glossary according to the specified section of the course "Russian".

The nodal subjects of a course necessary for formation of special competences of students at studying of discipline by them "A technique of training in Russian and literary reading" found reflection in a grant.

The order and sample of the language analysis of the corresponding linguistic units are given in each section of the edition.

The textbook is supplied with the index, trained can also use a search engine on the basis of the glossary.




This grant is developed for formation of basic knowledge, skills. At the same time the textbook can be used both at independent studying of discipline, and on occupation under the leadership of the teacher when studying material.

Transition between sections is made by click of a mouse on the corresponding menu item, and also use of hyperlinks between files in the textbook. Availability and simplicity of the interface does not demand special preparation. Material is added with graphic elements that promotes information saturation and expressiveness, allowing to concentrate attention trained on the content of the offered material, increases interest in training and self-training. The electronic textbook opens an opportunity and new prospects for modernization of traditional techniques of teaching with use of modern achievements of science and technology.

The textbook assumes also existence of connection to the Internet, it is supplied with references to the known educational and encyclopedic resources and video hostings on which illustrative materials on the questions considered in the textbook are placed.

**3. The used technical means**

For realization of this EU the HTML Help Workshop html-editor was used.

Minimum requirements: Intel Pentium 486 above, Windows XP above, 1024 Kb of free disk space.

**4. Conditions of transfer of program production or its sale**

Condition of transfer of this software product is the contract of purchase and sale signed between the Sterlitamak branch of the Bashkir state university and interested party.

## ADVERTISING AND TECHNICAL DESCRIPTION "The Electronic Educational and Methodical Complex "Literature with Fundamentals of Literary Criticism" (the Direction 44.03.03 — " Vocational (Defektologichesky) Education ", a Profile — a Bachelor Degree)"

*FGBOOU WAUGH Nizhegorodsky state pedagogical university of K. K.Minin*
*Maslova M.A.*

***UDC** 378*
***GRNTI** 14.35.09, 17.01.45*

**1. Functional purpose of the program, area of its application, its restriction**

The offered EUMK is intended for the organization and ensuring contact and independent work of students of the internal and intramural and extramural forms of education which are trained in the direction of preparation 44.03.03 "Vocational (defektologichesky) education" in preparation profiles "Logopedics" and "Oligophrenopedagogics" and represents set of the educational and didactic and methodical materials necessary for complex studying of the discipline in one semester "Literature with fundamentals of literary criticism" entering the "Philological Bases of Defektologichesky Education" module where a form of intermediate certification trained is examination.

For providing necessary quality of training of bachelors the maintenance of EUMK is constructed taking into account the competence-based, system, mark and rating and personal focused approach to the organization of educational and independent educational activity of students when studying discipline "Literature with fundamentals of literary criticism" in system of electronic training "Moodle". The analysis of the ADVERTISING AND TECHNICAL DESCRIPTION base showed that in OFERNIO there is similar course IUMK of discipline "Literature with fundamentals of literary criticism" No. 11645 constructed generally on material of the Russian literature. EUMK offered by us focuses students on acquaintance to samples of the Western European literature since history of the Russian literature was studied in a school course, and the basis of this resource was formed by contents of the author's manual (Maslova of M. A. Literatur with fundamentals of literary criticism: uchebn. grant. - N. Novgorod: Kvarts publishing house, 2016).

Taking into account competence-based approach studying of history of literature is directed to formation at the trained following kompetentnost presented to FGOS IN:

- ability to comprehend and analyze professionally and personally significant sociocultural problems (OK-3);
- ability to carry out work on spiritual moral, esthetic development of persons with limited opportunities of health, their familiarizing with historical values and achievements of domestic and world culture (PK-10).

"Literature with fundamentals of literary criticism" is the purpose of development of discipline preparation for professional activity in the field of education, the social sphere and culture.

Problems of discipline:

- to create at students of knowledge of specifics of literature in the context of history and criticism of literature;

- to create ability to independently estimate literary works according to the main literary criteria;

- to create ability to analyze the literary work as the art and esthetic phenomenon.

From a position of system approach this educational resource represents the open training system where trained have an opportunity through hypertext technologies to gain knowledge from other resources. In EUMK hyperlinks allow to get acquainted with materials of textbooks, to read the art texts which are in catalogs of the dug-out library systems. In the text of lectures references to research materials on concrete subjects are placed, references to illustrations, tables taking into account copyright are had.

The foundation of the personal focused training are laid in materials of a course (fig. 1) where the purposes and problems of a course, a rating plan of the student, the instruction for work with EUMK, methodical recommendations about performance of tasks are presented. The news forum allows to keep in contact between the teacher and students.

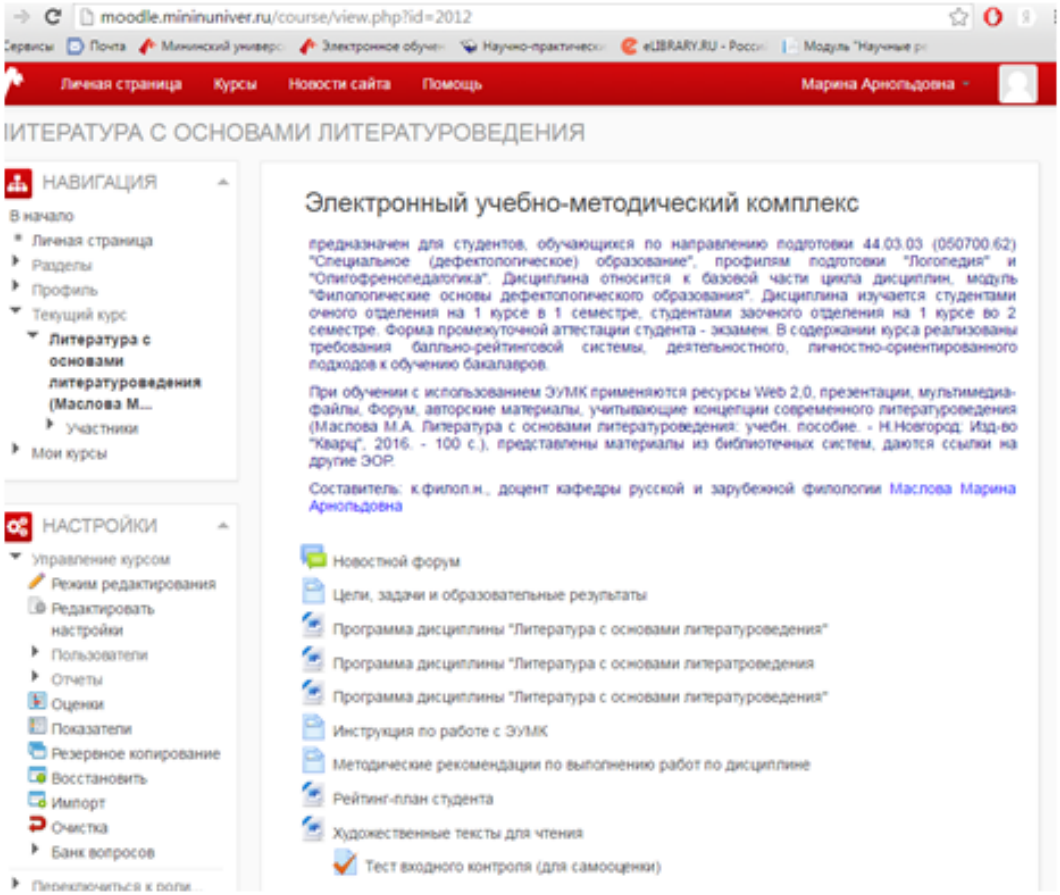
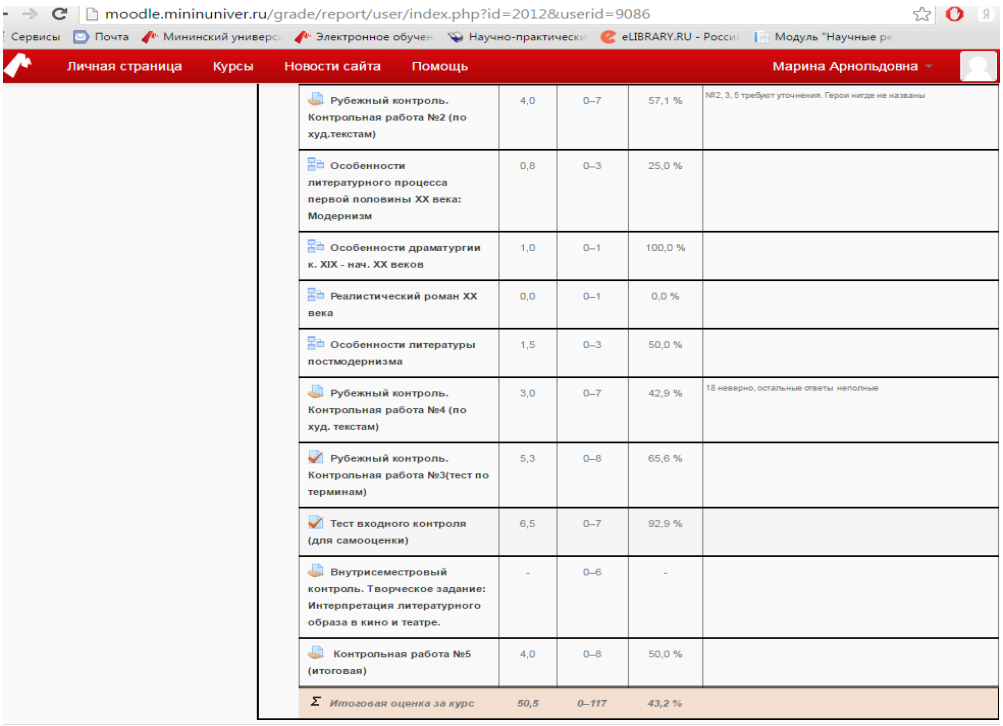



Figure 1 - The EUMK main page in Moodle

The mark and rating system of estimation of results of students used in EUMK organically is built in the electronic magazine Moodle (see fig. 2). LMS allows to store estimates on works of students and comments of the teacher to the performed works, to count the gained points in a rating of students in an interval to 100 points.



moodle.mininuniver.ru/grade/report/user/index.php?id=2012&userid=9086

Сервисы | Почта | Мининский универс | Электронное обучен | Научно-практическ | eLIBRARY.RU - Росси | Модуль "Научные ре

Личная страница | Курсы | Новости сайта | Помощь | Марина Арнольдовна

| | | | | |
|---|---|---|---|---|
| Рубежный контроль. Контрольная работа №2 (по худ.текстам) | 4,0 | 0–7 | 57,1 % | №2, 3, 5 требуют уточнения. Герои нигде не названы |
| Особенности литературного процесса первой половины XX века: Модернизм | 0,8 | 0–3 | 25,0 % | |
| Особенности драматургии к. XIX - нач. XX веков | 1,0 | 0–1 | 100,0 % | |
| Реалистический роман XX века | 0,0 | 0–1 | 0,0 % | |
| Особенности литературы постмодернизма | 1,5 | 0–3 | 50,0 % | |
| Рубежный контроль. Контрольная работа №4 (по худ. текстам) | 3,0 | 0–7 | 42,9 % | 18 неверно, остальные ответы неполные |
| Рубежный контроль. Контрольная работа №3(тест по терминам) | 5,3 | 0–8 | 65,6 % | |
| Тест входного контроля (для самооценки) | 6,5 | 0–7 | 92,9 % | |
| Внутрисеместровый контроль. Творческое задание: Интерпретация литературного образа в кино и театре. | - | 0–6 | - | |
| Контрольная работа №5 (итоговая) | 4,0 | 0–8 | 50,0 % | |
| Σ *Итоговая оценка за курс* | *50,5* | *0–117* | *43,2 %* | |

Drawing 2-Electronic magazine

EUMK consists of several sections structured on thematic and historical chronologically to the principles. The general block includes lists of the art texts obligatory for reading, the test of entrance control directed to identification of level of readiness of students. All types of tasks in each section EUMK assume acquisition and fixing of knowledge of the theory of literature (fundamentals of literary criticism) and practice of the analysis of the art text.

The first section contains materials and tasks on the subject "Preliterate Forms of Culture", the second section – on the subject "Literature of the Middle Ages and Renaissance", the third section – on the subject "Literature of 17-18 Centuries", the fourth section – on the subject "Literature of the 19th Century (Romanticism, Realism, Naturalism)", the fifth and sixth sections – on a subject "Literature of the 20th century: modernism and postmodernism". Lectures where the theoretical material connected with history of literary process, the characteristic of the literary directions and currents is lit are presented in each section. Some lectures are devoted to creativity of certain authors. In lectures questions for self-checking or a task of test type, the reference to critical literature or Internet resources are given (see fig. 3).

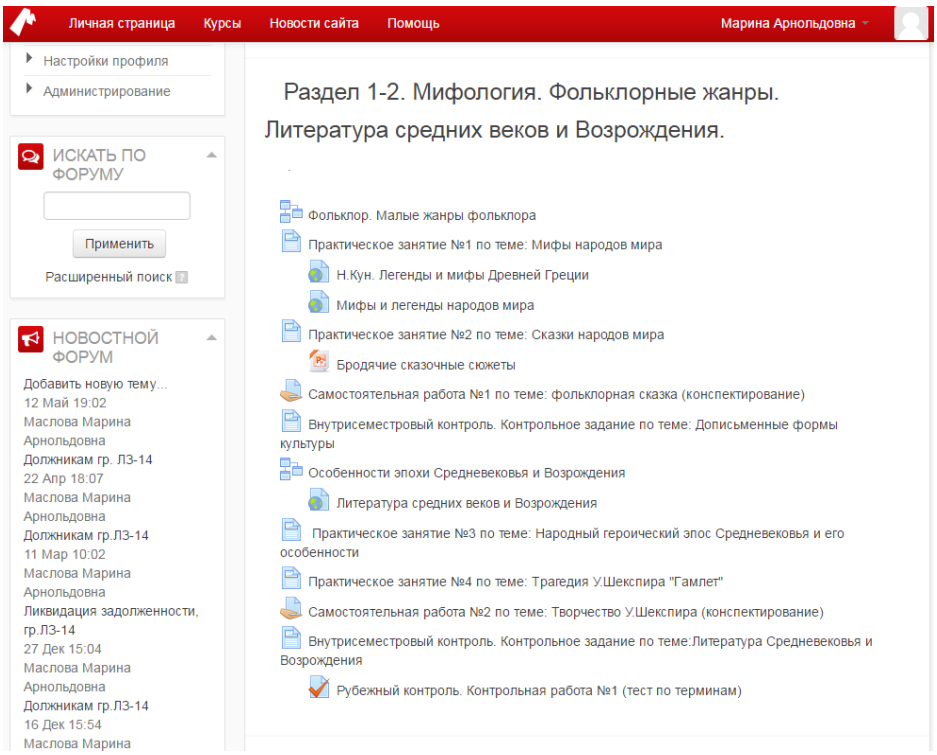



Figure 3 Fragment of Thematic Contents EUMK

Tasks to a practical training promote formation of skills of the analysis of theoretical material, the most art text. Independent work of students assumes different types of works with the art text and is directed to implementation of abstracts. Methodical recommendations about work with scientific literature, lists of the recommended literature are presented to EUMK. Each section EUMK includes tasks/tests for intra semestrial (on subjects) and rubezhny (according to sections) control.

In the maintenance of EUMK the principle of variability of the offered tasks is considered. Creative tasks are performed at will – it can be the report or writing of the essay, the review of a theatrical performance or the screen version of the studied works, recommendations about performance of a creative task are made. For the organization of joint activity the Moodle elements the Forum "Discussion of Read" are used.

The section "Additional Materials for Self-education" offers subjects for individual messages and term papers, tests for self-checking, references to various EOR. The section "Directory Materials" includes the list of manuals, hyperlinks on research literature and the websites of the leading libraries of Russia. There is a glossary containing the main literary terms used in this course.

Control questions for examination, options of total examination and versions of final certification tests are presented in the section "Materials for Certification".

EUMK created for maintenance of classroom occupations and independent work of the students studying discipline "Literature with fundamentals of literary criticism" realizes the concept of the personal focused vocational education since the structure of a course gives the chance of systematic updating, includes different types of tasks and tests, and navigation of a course provides the monitoring system behind performance of tasks and dialogue between the teacher and students.

The possibility of editing EUMK, creation of its analogs taking into account the FGOS updating is provided in the Moodle system.

## 2. The used technical means

During creation of EUMK the tools of system of electronic training Moodle were used. Separate materials of a course are prepared with application of the programs MS Office, Adobe Reader, Power Point.

**3. Special conditions of application and requirement of organizational and technological character**

The IBM PC 486/Pentium/AMD computer which is working under control of the Russian-language version of the MS Windows 98/2000/2003/XP/Vista/7 operating systems, having Internet connection via the Opera browsers, version 9 above, Mozilla or Google Chrome is necessary for work with EUMK. Viewing of some materials requires the software of MS Office, Adobe Reader 7.0 above included in structure of EUMK.

The developed course is stored on the server of Mininsky university, access according to the reference http://moodle.mininuniver.ru/course/view.php?id=2012

after authorization in LMS Moodle. Access to an electronic resource on the Internet is provided in the presence of the corresponding connection both with server, and from the client party. Other conditions of application and requirements of organizational, technical and technological character for operation of this resource are not required.

**4. Conditions of transfer of documentation on development or its sales**

EUMK is not a commercial product and is provided to students and teachers of NGPU of K. Minin free of charge.

At interest in EUMK of the third-party organizations the realization of an electronic product is enabled on a contractual basis.

Concerning acquisition of EUMK it is necessary to contact the address: 630950, Nizhny Novgorod, Ulyanov St., 1, FGBOU VPO "The Nizhny Novgorod state pedagogical university of K. Minin", educational and methodical management, phone: + 7 (831) 436-02-61.

## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic workshop on discipline "Imitating modeling"

*Ministry of Education and Science of the Russian Federation*
*Nazarova O.V.*

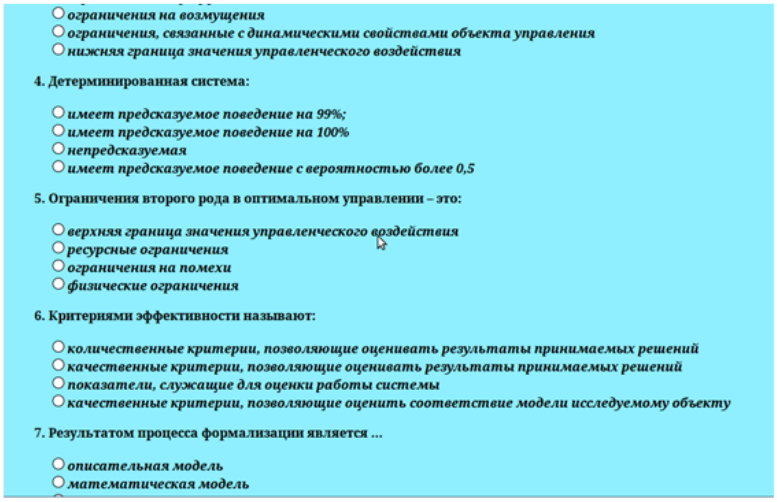
***UDC*** *378.14*
***GRNTI*** *14.35.07, 28.17.33*

**1. Functional purpose of the program**

This software product is intended for carrying out practical works on discipline "Imitating modeling" for students of the direction of preparation 09.03.03 "Applied informatics".

The presented software application is written in the Java Script and HTML language. Several modules are a part of this program project:

- the short theoretical section on discipline "Imitating modeling";
- examples of the solution of practical tasks with detailed explanations and illustrations;
- the test module containing tests for control of knowledge of three types (figure 1-3).



- *ограничения на возмущения*
- *ограничения, связанные с динамическими свойствами объекта управления*
- *нижняя граница значения управленческого воздействия*

**4. Детерминированная система:**

- *имеет предсказуемое поведение на 99%;*
- *имеет предсказуемое поведение на 100%*
- *непредсказуемая*
- *имеет предсказуемое поведение с вероятностью более 0,5*

**5. Ограничения второго рода в оптимальном управлении – это:**

- *верхняя граница значения управленческого воздействия*
- *ресурсные ограничения*
- *ограничения на помехи*
- *физические ограничения*

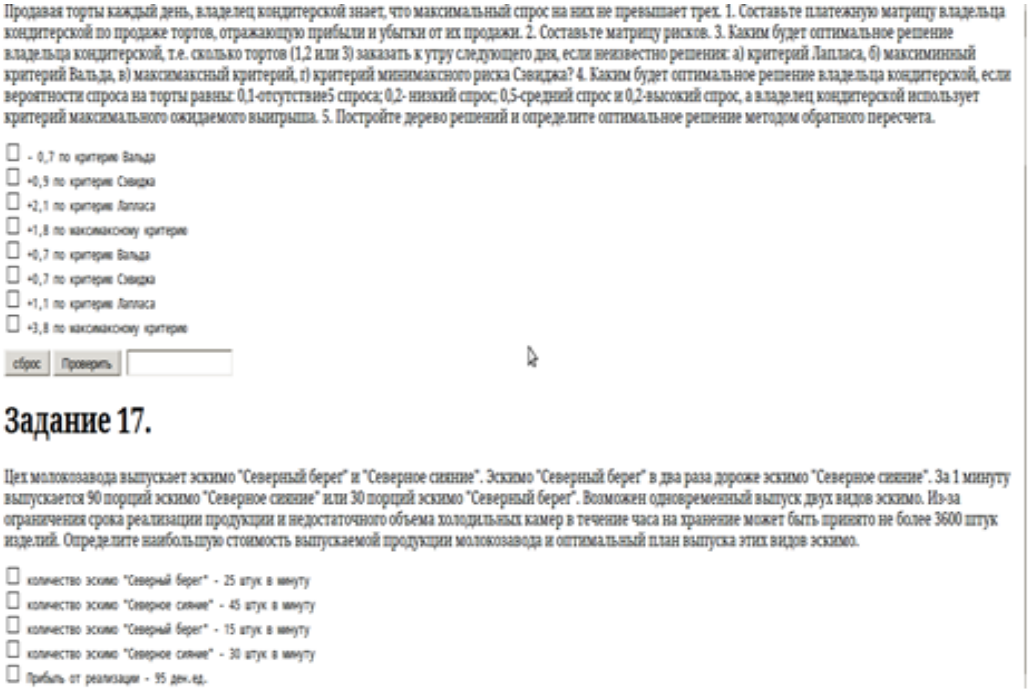
**6. Критериями эффективности называют:**

- *количественные критерии, позволяющие оценивать результаты принимаемых решений*
- *качественные критерии, позволяющие оценивать результаты принимаемых решений*
- *показатели, служащие для оценки работы системы*
- *качественные критерии, позволяющие оценить соответствие модели исследуемому объекту*

**7. Результатом процесса формализации является ...**

- *описательная модель*
- *математическая модель*

Figure 1 – The test with the choice of one correct answer



Продавая торты каждый день, владелец кондитерской знает, что максимальный спрос на них не превышает трех. 1. Составьте платежную матрицу владельца кондитерской по продаже тортов, отражающую прибыли и убытки от их продажи. 2. Составьте матрицу рисков. 3. Каким будет оптимальное решение владельца кондитерской, т.е. сколько тортов (1,2 или 3) заказать к утру следующего дня, если неизвестно решения: а) критерий Лапласа, б) максиминный критерий Вальда, в) максимаксный критерий, г) критерий минимаксного риска Сэвиджа? 4. Каким будет оптимальное решение владельца кондитерской, если вероятности спроса на торты равны: 0,1-отсутствие5 спроса; 0,2- низкий спрос; 0,5-средний спрос и 0,2-высокий спрос, а владелец кондитерской использует критерий максимального ожидаемого выигрыша. 5. Постройте дерево решений и определите оптимальное решение методом обратного пересчета.

- ☐ - 0,7 по критерию Вальда
- ☐ +0,9 по критерию Сэвиджа
- ☐ +2,1 по критерию Лапласа
- ☐ +1,8 по максимаксному критерию
- ☐ +0,7 по критерию Вальда
- ☐ +0,7 по критерию Сэвиджа
- ☐ +1,1 по критерию Лапласа
- ☐ +3,8 по максимаксному критерию

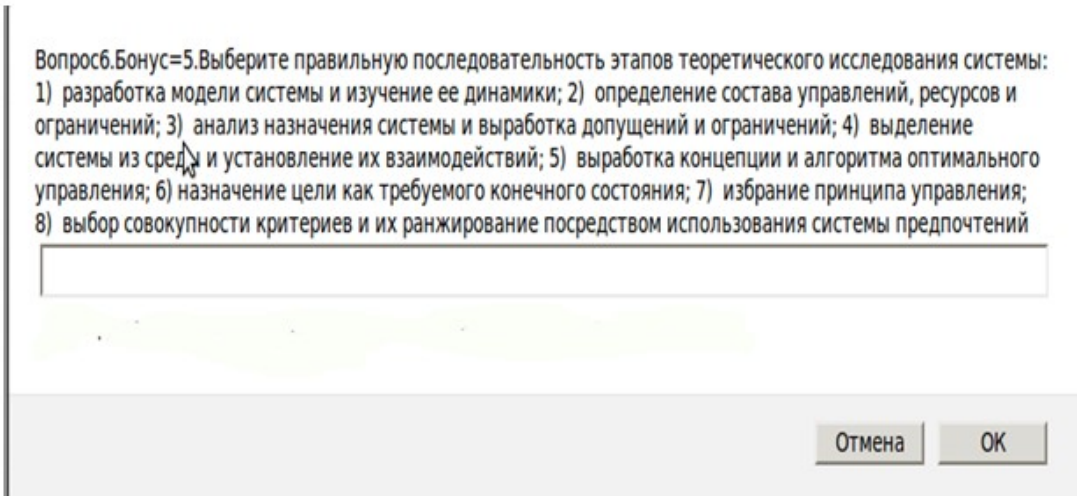
сброс | Проверить

**Задание 17.**

Цех молокозавода выпускает эскимо "Северный берег" и "Северное сияние". Эскимо "Северный берег" в два раза дороже эскимо "Северное сияние". За 1 минуту выпускается 90 порций эскимо "Северное сияние" или 30 порций эскимо "Северный берег". Возможен одновременный выпуск двух видов эскимо. Из-за ограничения срока реализации продукции и недостаточного объема холодильных камер в течение часа на хранение может быть принято не более 3600 штук изделий. Определите наибольшую стоимость выпускаемой продукции молокозавода и оптимальный план выпуска этих видов эскимо.

- ☐ количество эскимо "Северный берег" - 25 штук в минуту
- ☐ количество эскимо "Северное сияние" - 45 штук в минуту
- ☐ количество эскимо "Северный берег" - 15 штук в минуту
- ☐ количество эскимо "Северное сияние" - 30 штук в минуту
- ☐ Прибыль от реализации - 95 ден.ед.

Figure 2 – The test with the choice of several correct answers



Вопрос6.Бонус=5.Выберите правильную последовательность этапов теоретического исследования системы: 1) разработка модели системы и изучение ее динамики; 2) определение состава управлений, ресурсов и ограничений; 3) анализ назначения системы и выработка допущений и ограничений; 4) выделение системы из среды и установление их взаимодействий; 5) выработка концепции и алгоритма оптимального управления; 6) назначение цели как требуемого конечного состояния; 7) избрание принципа управления; 8) выбор совокупности критериев и их ранжирование посредством использования системы предпочтений

Отмена | OK

Figure 3 – The test with a possibility of input of the answer by the user

**2. Program scope**

The electronic practical work is designed for students of the educational organizations of the higher education of the direction of preparation 09.03.03 "Applied informatics" and is used by students and teachers during a practical training of the above-stated discipline.

This software product has the ergonomic intuitive interface thanks to what users (students, teachers) will be able quickly to adapt to work in it.

**3. The used technical means**

This program imposes some requirements to hardware and program part:

- the Intel Pentium processor (or Pentium-compatible) with a clock frequency of 133 MHz or above;
- the hard drive with a capacity of 1 Gbyte, with a capacity of free space not less than 650 MB;
- the CD ROM device or the DVD device with a possibility of loading of this program from a compact disk;
- mouse;
- keyboard;
- monitor;
- Windows or Linux OS (with the installed emulator).

For installation through a network on the computer it is necessary to have one or several network adapters allowing to get access to the shared network folder containing distributive files

At the specified characteristics of hardware and program part this appendix will work without collisions and failures.

**4. Special conditions of application**

This program can work in Linux-like operating systems in the presence of the Wine emulator, etc. The submitted appendix can be transferred for operation to the educational organizations of the higher education for the contract with the author.

## ADVERTISING AND TECHNICAL DESCRIPTION "A multimedia educational and methodical complex for distance learning on discipline "A foreign language. German (the 2nd semester)" (the direction - 45.03.02 Linguistics, level – a bachelor degree)"

*FGBOOU WAUGH "Omsk state technical university"*
*SHarapova T.N.*

***UDC 378, 811.11***
***GRNTI 14.35.07, 16.01.45***

**1. Functional purpose of the program, scope, its restrictions**

Purpose of the multimedia educational and methodical complex (EMC) on discipline "A foreign language. German (2nd semester)": independent use by students as educational and methodical materials at distance learning for theoretical, practical preparation and self-examination. Multimedia UMK is also suitable for maintenance of all types of educational activity at full-time courses.

During creation of a multimedia educational and methodical complex for distance learning on discipline "A foreign language. German (the 2nd semester)" author's materials were used: schemes, drawings, tables, charts, test blocks. In addition, the resources which are available in free access on the Internet were used.

Training materials have:

- the accurate modular structure coordinated with the working program of discipline;
- complexity (include theoretical, practical, control materials);

- completeness of a statement;
- high extent of visualization (i.e. contain illustrations, charts, schedules, etc.).

Training materials display the modern level and scientific achievements in the respective sphere.

UMK "Foreign language. German (the 2nd semester)" contains 4 videos of a workshop on grammar and 9 multimedia slide lectures:

1. Videos of a workshop on grammar:

1.1. Video "Conjugation of verbs in Präsens Aktiv" (the present of active voice) – 680,2 MB

1.2. Video "Conjugation of verbs in Präteritum (Imperfekt) Aktiv" (past narrative tense of active voice) - 530,4 MB

1.3. Video "Conjugation of verbs in Perfekt Aktiv and in Plusquamperfekt Aktiv" (hard (complete) past tense and hard prepast tense of active voice) – 701,2 MB

1.4. Video "The multiple-valued word "zu" and infinitive turns" – 480,9 MB

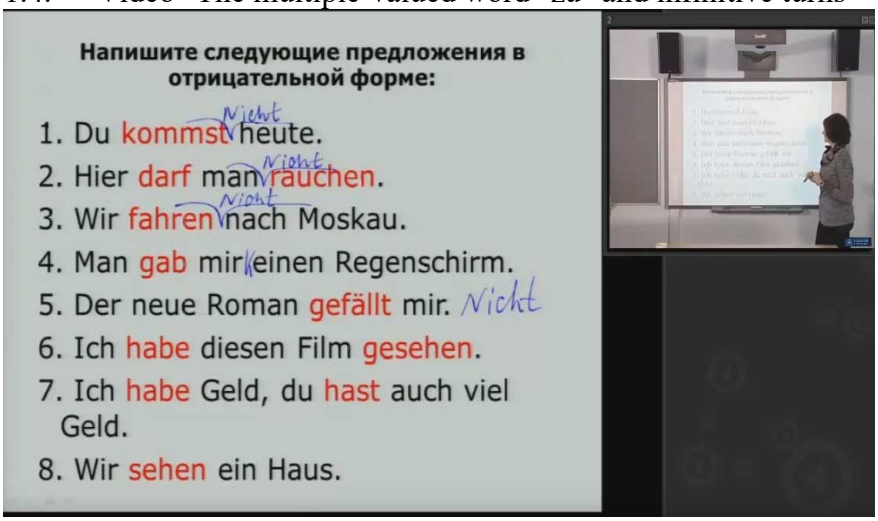



Fig. 1. Example of video of a workshop on grammar

2. Multimedia slide lectures:

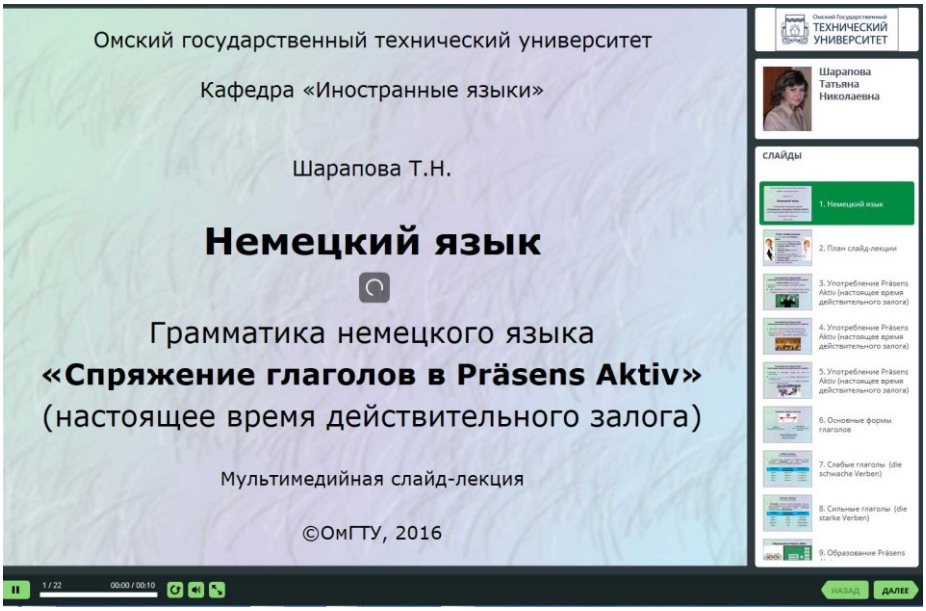



Fig. 2. An example of slide lecture in system in iSpring Suite

2.1. The multimedia slide lecture "Conjugation of Verbs in Präsens Aktiv" (the present of active voice) - 68,5 MB.

2.2. The multimedia slide lecture "Conjugation of Verbs in Präteritum (Imperfekt) Aktiv" (past narrative tense of active voice) – 59 MB.

2.3. Multimedia slide lecture "Conjugation of verbs in Perfekt Aktiv" (hard (complete) past tense of active voice) – 58,9 MB.

2.4. The multimedia slide lecture "Conjugation of Verbs in Plusquamperfekt Aktiv" (hard prepast tense of active voice) – 70,2 MB.

2.5. The multimedia slide lecture "Future Time in German and Ways of Its Expression" – 42,6 MB.

2.6. Multimedia a slide - "Modalverben" (modal verbs) – 67,8 MB.

2.7. The multimedia slide lecture "Indefinite-personal Pronoun of Man and Impersonal Pronoun of Es" – 40,6 MB.

2.8. The multimedia slide lecture "Multiple-valued Word "Zu" and Infinitive Turns" - 52,7 MB.

2.9. The multimedia slide lecture "Die Stadt am Irtysch" (The city on Irtysh) - 79,9mb

TOTAL: 2932,9 MB

EUMK is approved in Omsk the state technical university on specialties of extramural studies.

As technical means for creation of components of multimedia UMK on discipline "A foreign language. German (2 semester)" software products were used: Power Point, iSpring Suite. The main advantages of these tools is ease and speed of the created materials.

**2. The used technical means**

2.1. For development of a multimedia educational and methodical complex for distance learning on discipline "A foreign language. German (the 2nd semester)" the following equipment rooms and software are necessary:

1. Computer and AMD Phenom (tm) II processor.
2. Random access memory – 4096 MB.
3. Summary space on the hard drive of 1024 MB.
4. Color SVGA monitor of the computer resolution 1024x768 and above.
5. Operating system: Windows 7.
6. Software of iSpring Suite 7, Mirapolis Virtual Room.

2.2. For functioning of a multimedia educational and methodical complex for distance learning on discipline "A foreign language. German (the 2nd semester)" the user the following equipment rooms and software are necessary:

When viewing on the computer:

13. Computer and Intel/AMD processor of 1 GHz or above.
14. Random access memory – 1024 MV.
15. Free space on the hard drive of 1024 MB.
16. Color SVGA monitor of the computer resolution 1024x768 and above.
17. Operating system: Windows XP/Vista/7/8, Macintosh, Linux.
18. Software: Internet Explorer 6 above, Mozilla Firefox 3.x above, Safari 3 above, Google Chrome, Opera 9.5 above, Adobe Flash Player 10.1 or above.

For viewing on mobile devices:

1. Mobile devices with resolution 480x320 and above.
2. Operating system: Mobile: Android 3.x or higher, iPad, iPad2, The New iPad (iOS 5.x or higher), Windows Phone 7.5 or higher, Windows RT.
3. The software for mobile devices. Desktop: Internet Explorer 9 or higher, Safari 5 or higher, Mozilla Firefox 12 or higher, Opera 11.6 or higher, Google Chrome 18 or higher.

**3. Special conditions of application and requirement of organizational, technical and technological character**

Application of an educational and methodical complex for distance learning on discipline "A foreign language. German (the 2nd semester)" it is possible in the conditions of a modern

educational computer class, and also on mobile devices of pupils at network placement of a complex with access on the Internet. Reference of access to the https://ispri.ng/967r complex.

**4. Conditions of transfer and sale of program documentation**

Multimedia educational and methodical complex for distance learning on discipline "A foreign language. German (the 2nd semester)" and documentation to it can be given to the interested person or the organization on the basis of the contract with OMGTU and authors according to the current legislation

## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic Resource for Support of Studying of the Section "Methods" of the C#Programming Language"

*Perm state national research university*
*Grishin A.A., Mindorov N.I., Romashkina T.V., Sokolov A.N.*

***UDC** 378*
***GRNTI** 14.35.07, 50.05.03*

**1. Functional purpose of a product, area of its application, its appointment**

The offered "Electronic educational resource for support of studying of the section "Methods" of the C# programming language" is intended for support of sequence of actions trained (independent studying of theoretical material; development of algorithms and programming of educational tasks at laboratory and practical works under the leadership of the teacher and at independent out-of-class work).

This resource allows to provide the specified functionality due to use in educational process of available means and methods of information technologies for the purpose of creation of training materials, their editing, delivery of training materials, control and the accounting of work of trainees.

The offered resource – set of the interacting subsystems (programs) "Teacher", "Student" and "Database". Are stored in the database: lists of groups and students, the studied material, tasks for independent work, test tasks, etc. Work of the user with a resource can be carried out in one of three modes:

- "Administrator" is provided tools for control of a resource and editing the list of teachers, the list of groups of students, etc. (fig. 1);
- "Teacher" – is provided tools for creation of the author's course ("tree" of a training material) and "attachment" to it the corresponding material (lecture, control and measuring materials, etc.) (fig. 2);
- "Student" – the opportunity of studying of a training material on "a training tree", razrabrtka and verifications of training programs, viewing of the results, access to reference materials (fig. 6) is given.

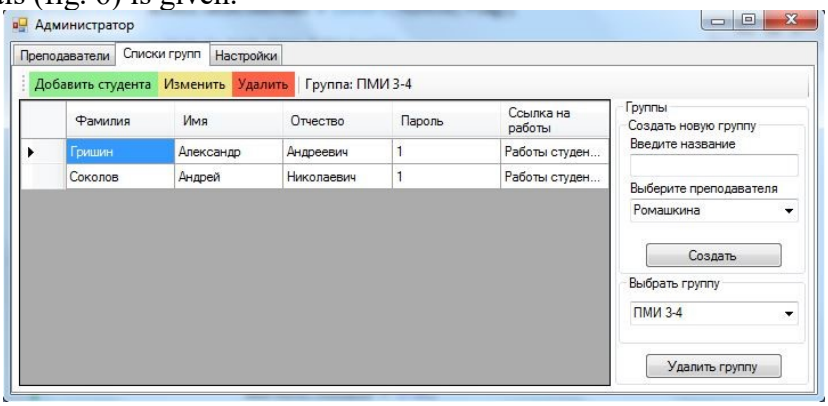



Figure 1. An application window for creation of the list of students in group

Work in the Teacher mode begins with the menu of the teacher from which it is possible to pass to creation or editing a course, to addition and editing tasks and tests, and also to viewing of the programs which are handed over by students (fig. 2).

Figure 2. Operating mode "Teacher"

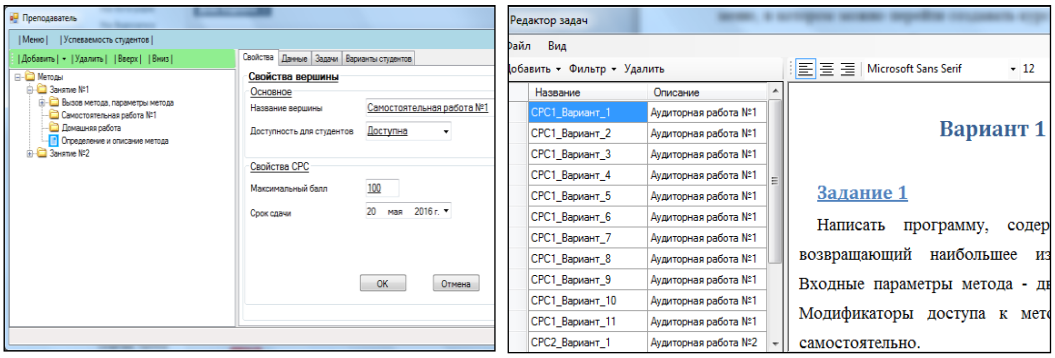
*The course* is a hierarchical treelike structure to which tops the teacher can "attach" a training material.

Tops are classified on several types:

- "The new section" – has no attached files, is used only for allocation of levels in a tree;
- "Independent work" – is used for allocation of a directory with tasks and means further addition of tasks in it for students;
- "Training materials" – the attached file with literature on some subject contains;
- "Task" – contains the attached file with a task;
- "Test" – contains the reference to the test.

*The editor of tasks* – allows to add a task to system; the text of a task is displayed in a window of display of the text. For each added task the teacher has to add and tests for the automated verification of programs by "black box" method (Fig. 3).

*Check of tasks* – allows to check a program code for existence of necessary designs to confirm the point given automatically by "a black box" or to change it, and also to see all passed tasks and tests at each student of the chosen group (the Progress of Students tab (Fig. 3 and)).




a) b)

Figure 3. a). Editing tree; б). Editor of tasks.

*Data for check* – are provided by addition of a set of tests for verification of the training program developed trained. The possibility of loading of a data set from the file is provided. (fig. 4).

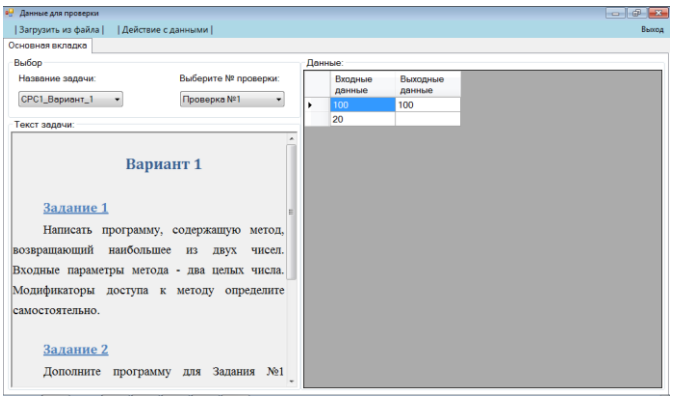
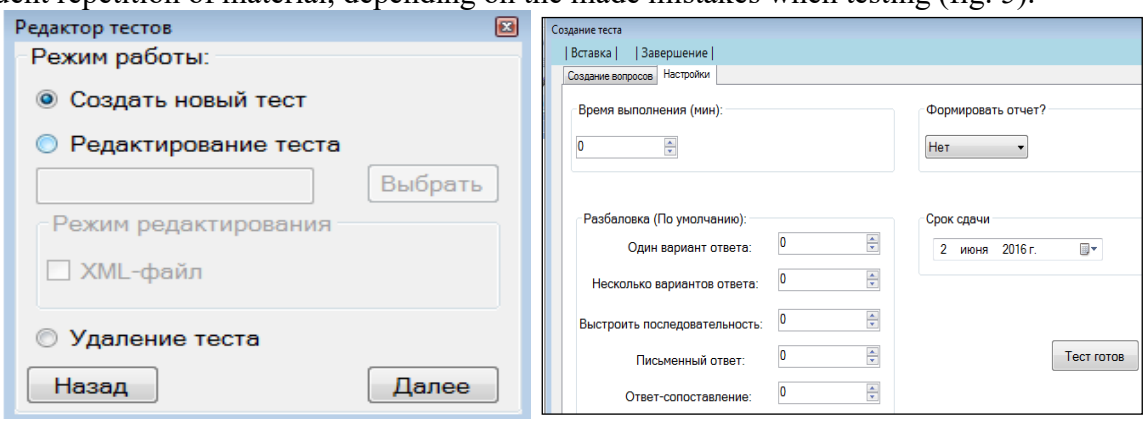



Figure 4. Creation of the tasks given for check.

*The editor of tests* – is intended for creation by the teacher of tests of a training material. Opportunities are provided:

- setting up test; the razballovka installations for a certain type of a question;
- additions to the test of graphic material;

"bindings" to a question of the test of theoretical material from "a training tree" for the subsequent repetition of material, depending on the made mistakes when testing (fig. 5).



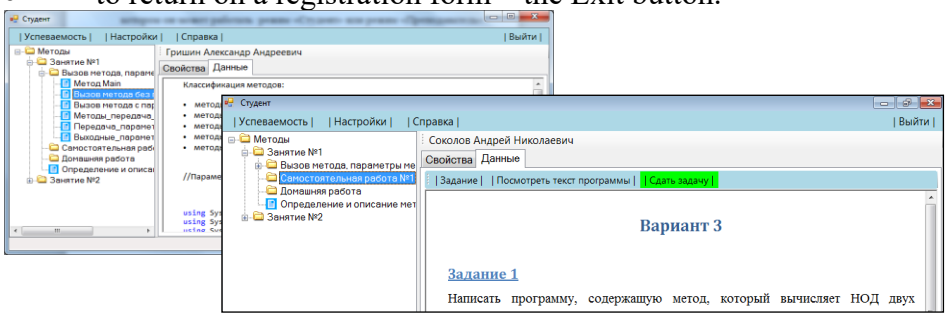

a) b)

Drawing. 5. a) Editor of tests. б). Setting up test.

The created test remains in the Tests folder in the .xml format.

Work in the Student mode provides trained the following opportunities:

- to study the theory according to the chosen section (double "click" on any section – top of a tree (fig. 6));
- to see the results of work, both according to tests, and on independent works – the Progress button;
- to change the password to the account – the Control button (fig. 6);
- to use the user's guide – the Reference button;
- to return on a registration form – the Exit button.




Drawing 1. Operating mode "Student".

For execution of the test trained it is necessary to go to the Properties tab and to choose "To begin performance" the test. After the end of testing the form with results opens.

The program developed by the student in the C# programming language is checked by the Black Box component (fig. 7). Stages of verification of one separate program:

- compilation;
- extraction from the database of a set of tests for this program;
- start of the program on a set of tests;
- control of correctness of output results;
- preservation of results.

Information on current state of the working component is displayed. Results of check (points of students) are automatically entered in the database. Temporary files (exe-files of programs of students) automatically are removed.

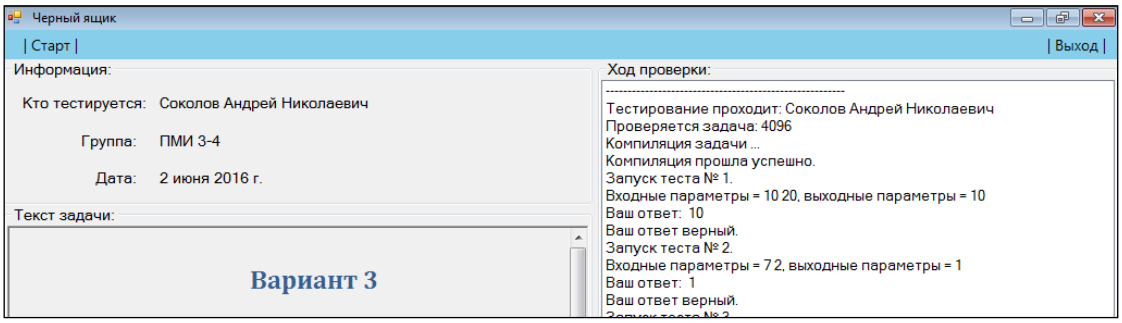



Figure 7. Check course.

**2. The used technical means**

The offered electronic educational resource is created in the C# language in the Microsoft Visual Studio 2013 programming environment, with use of Microsoft SQL Server 2012 DBMS and can be used on computers with the installed software products: Microsoft Visual Studio Express 2010 above, Microsoft Windows 7 OS above.

**3. Special conditions and requirements of organizational, technical and technological character**

Work of a resource does not require special conditions and implementation of special requirements of organizational, technical and technological character.

**4. Conditions of transfer of documentation or its sale**

Transfer and sale of the software product is made under the agreement directly with PGNIU:

1) A.V. Mikhaylova
e-mail: mozg.tt@gmail.com
2) O. E. Khudyakova
e-mail: mozg.ipp@gmail.com

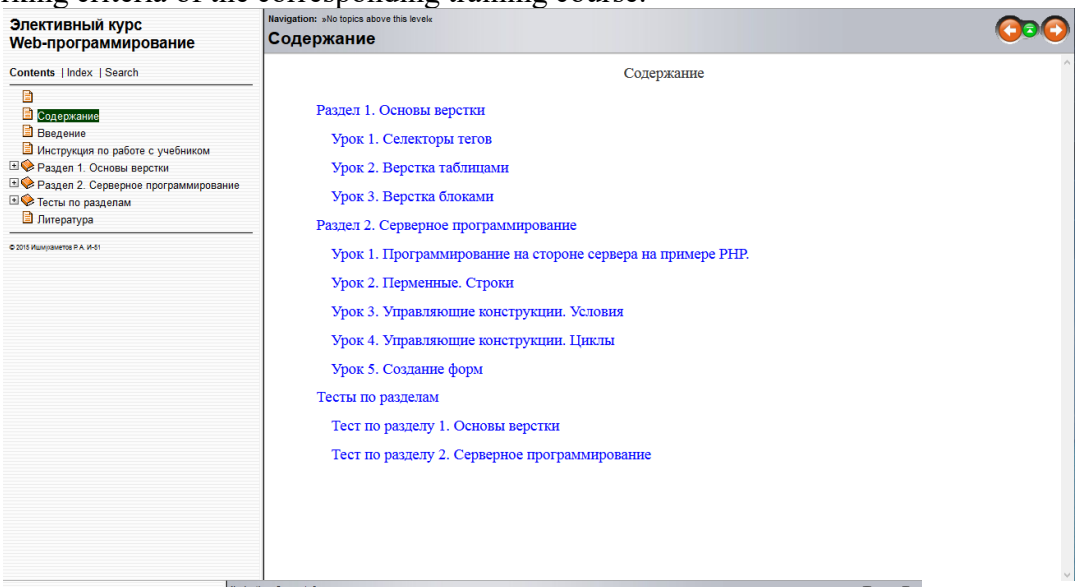
## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic training course "Web programming" (direction: 010400.62 "Applied mathematics and informatics", 010500.62 "Software and administration of information systems"; level - a bachelor degree)"

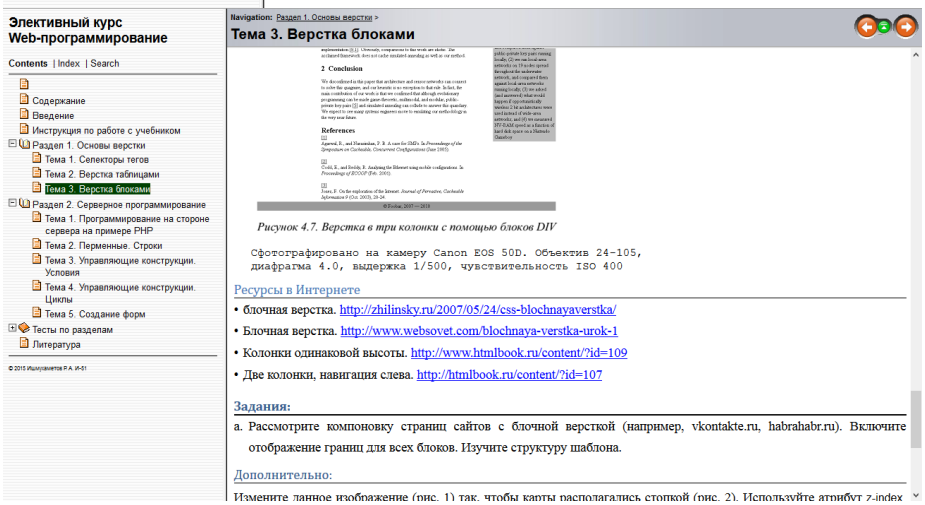
*Sterlitamak branch of federal public budgetary educational institution of the higher education "Bashkir state university"*
*CHiganova N.V., Ishmuhametov R.A.*

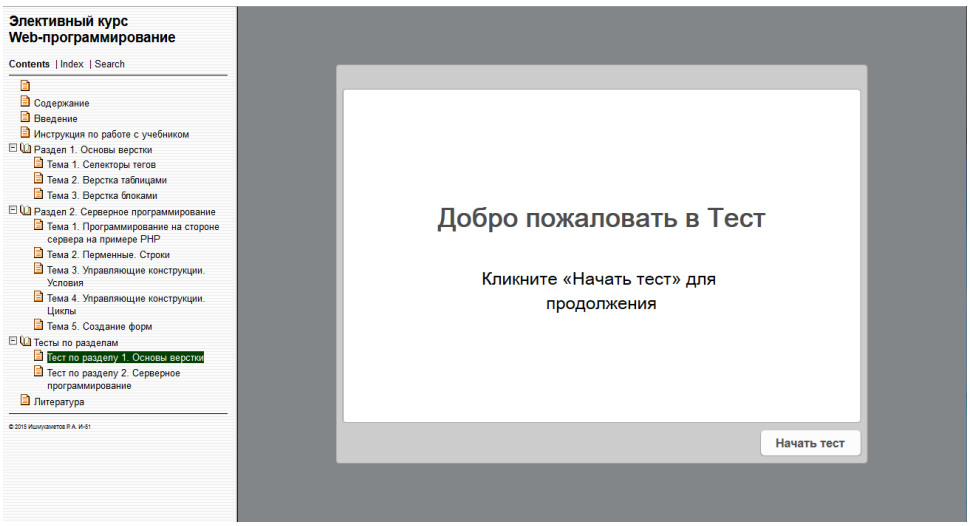
***UDC** 378*
***GRNTI** 14.35.07, 05.25.00, 05.13.17, 12.00.03*

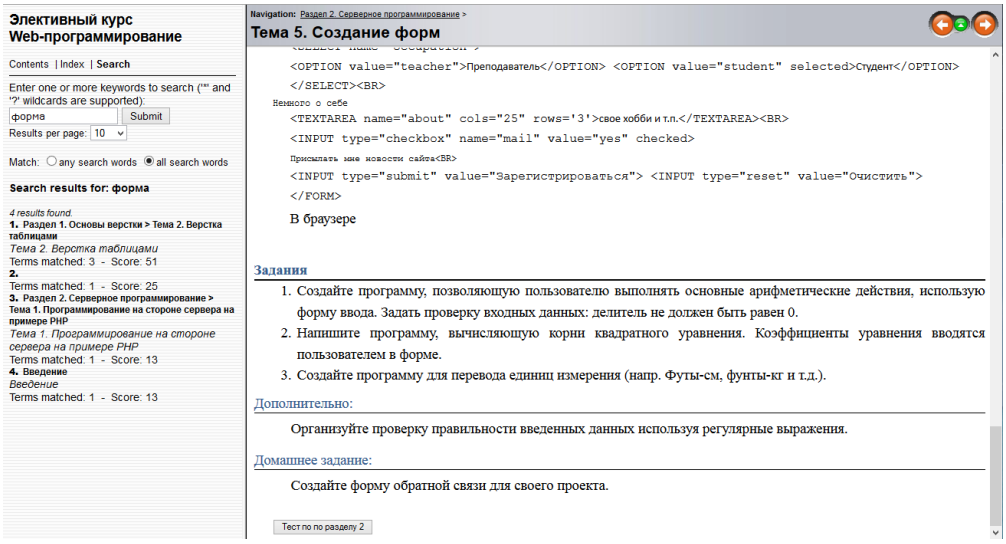
**1. Functional purpose of the electronic textbook, area of its application and restriction**

The electronic textbook on a subject of the elective course "Web programming" is aimed to provide training of pupils in individual and optimum training programs with management of training process. The electronic textbook is developed according to state standard specifications and working criteria of the corresponding training course.






The electronic textbook is intended for students, the applied informatics which is trained in the directions, administration of information systems, and also for pupils of a physical and mathematical profile.

**2. Structure, operating modes and conditions of application**

electronic textbook

The electronic textbook is created in a reference format, on the basis of web sranitsy which use as a standard markup language of HTML for material formatting, and the JavaScript language for realization of interactive contents. The textbook consists of two sections which is among:

Imposition bases

Server programming

At each section there is a theoretical material, practical works on each subject, tasks of imposition and programming with different levels of complexity, and tests with various types of questions according to each section, for intermediate control.

For transition between parts of the textbook hyperlinks, in the form of buttons are realized. Tests are realized in a format of the presentations at which successful passing sending results for mail is available.

**3. The used technical means**

For realization of this EU HTML&Help WorkShop, iSpring QuizMaker and iSqpring Suite were used.

Minimum requirements: Intel Pentium 486 above, Windows XP above, 60Mb free disk space.

4. Conditions of transfer of documentation or its sale

Program documentation extends freely, the program on contractual conditions. A condition of transfer of this software product is the contract of purchase and sale signed between the Sterlitamak branch of the Bashkir state university and interested party.

## ADVERTISING AND TECHNICAL DESCRIPTION "Computer Modelling of Impact by the Acoustic Field on the Porous Environment"

*Sterlitamak branch FGBOU VPO Bashkirsky state university*
*Husainov I.G.*

***UDC** 378*
***GRNTI** 14.35.07*

**1. Functional purpose of a product, scope, its restrictions.**

The software application is intended for use on classes in discipline of specialization on the directions of preparation "Applied mathematics and informatics", "Physics" and "Pedagogical education" (a profile of preparation "Physics"). The program models impact by the acoustic field on the porous environment saturated with liquid.

Computer modeling of waves will allow students to understand better the studied material on disciplines of "The mechanic of liquid and gas", "Physicist" (the section of mechanics), "The mechanic of the continuous environment" and on disciplines of specialization of departments of "Applied informatics and programming", "The general and theoretical physics". Computer modeling what most interesting moments in more detail.

Computer modeling of the studied process is executed for the first time.

The created electronic resource will allow to enrich a course, supplementing it with various opportunities of computer technologies, and will make it more interesting and attractive trained. The electronic educational resource "Computer Modelling of Impact by the Acoustic Field on the Porous Environment" can be used also studying the senior classes and teachers. The purpose of this digital application - by means of computer model to show process of heating of the porous environment at acoustic influence.

*Mathematical model of process of heating by saturated liquid of the porous environment acoustic influence*

Let on border $x=0$ the porous environment saturated with liquid the source of harmonious waves of pressure works. Under the influence of a source of waves of pressure liquid will make oscillating motions concerning a skeleton of the porous environment. At the description of the studied process we will consider that a porous skeleton incompressible. This assumption means that because of weak attenuation of the "fast" waves extending on a skeleton, the thermal effect for them can be neglected. At the description of a wave and temperature task in system we will consider that temperatures of liquid and a skeleton of the porous environment in each point coincide. It is necessary that heterogeneity of the temperature field does not influence the acoustic field of pressure (we neglect the influence of temperature effects on acoustic characteristics determined by viscosity and compressibility).

Taking into account the accepted assumptions we will write down the equations describing the studied process. We will write down conservation law of mass of liquid in the absence of sources of weight in shape

$$m\frac{\partial \rho_l}{\partial t}+\rho_{l0}\frac{\partial u}{\partial x}=0. \qquad (1)$$

Here $m$ – porosity; $\rho_l$ – indignation of density of liquid; $\rho_{l0}$ – the liquid density corresponding to not indignant state; $u$ – liquid filtration speed.

In case of a non-stationary filtration of liquid in the equation of the movement it is necessary to consider action of volume friction force

$$\rho_{l0}\frac{\partial u}{\partial t}=-m\frac{\partial p}{\partial x}-\frac{m\mu}{k}u,\ x>0. \quad (2)$$

where $p$ – indignation of pressure in liquid; $k$ – coefficient of permeability of the porous environment; $\mu$ – dynamic viscosity of liquid.

We will accept the equation of a condition of liquid in the porous environment in a look

$$p=C_l^2\rho_l. \quad (3)$$

Existence of a source of harmonious waves of pressure on border $x=0$ it can be written down in the form of the following boundary condition:

$$p=A_p\cos\omega t,\quad x=0,\ t>0, \quad (4)$$

where $A_P$ and $\omega$ – amplitude and circular frequency of a wave.

For the right border we will consider a case when the porous environment has final width ($0<x<l$) and border at $x=l$ impenetrable.

$$u=0,\quad x=l. \quad (5)$$

The equation of inflow of heat on the porous Wednesday saturated with liquid taking into account a volume source of heat connected with viscous attenuation of the acoustic field, we will write down in a look

$$\rho c\frac{\partial T}{\partial t}=\lambda\frac{\partial^2 T}{\partial x^2}+\tilde{Q}, \quad (6)$$

$$\rho c=(1-m)\rho_s c_s+m\rho_{l0}c_l,\ \lambda=\lambda_s(1-m)+\lambda_l m,\ \tilde{Q}(x)=Q(x),\ 0\le x\le l.$$

Here $\rho_s$, $c_s$ and $\lambda_s$ – density, thermal capacity and heat conductivity of material of a skeleton of the porous environment; $c_l$ and $\lambda_l$ – thermal capacity and heat conductivity of liquid; $m_0$ – porosity of a zone $l<x<\infty$. Average inflow of heat to unit of volume for a unit of time $Q(x)$ is from the solution of a wave task.

We will accept an entry condition for temperature in a look

$$T=T_0,\quad x\ge 0,\quad t=0. \quad (7)$$

Let's believe that border $x=0$ teploizolirovana

$$\frac{\partial T}{\partial x}=0,\ x=0. \quad (8)$$

On border $x=l$ there is a heat exchange to environment. Temperature and a stream of heat on border $x=l$ are continuous:

$$[T]=0,\ \left[\lambda\frac{\partial T}{\partial x}\right]=0,\ x=l. \quad (9)$$

Here $[\varphi]$ means jump of parameter $\varphi$.

Thus, the mathematical model of a task consists of system of the equations (1)-(9).

For performance of computing experiment the program in the environment of Borland C ++ is created.

There are no restrictions on application of an electronic resource.

**2. Used technical and software**.

The minimum system requirements for work with a grant:

operating system of Microsoft Windows HR;

the processor with a clock frequency of 100 MHz;

the RAM size is 8 MB;

about 6 MB of free disk space.

**3. Special conditions and requirements of organizational, technical and technological character.**

Are not provided.

The software application is intended as for studying in specially equipped audiences of higher educational institutions, and for independent studying in house conditions.

**4. Conditions of transfer of documentation on development or conditions of its sale.**

There are no special conditions. By agreement.

## ADVERTISING AND TECHNICAL DESCRIPTION "Remote Training Course " Computer Modelling " (the Direction 09.03.04 " Program Engineering ", a Profile — a Magistracy)"

*FGBOOU WAUGH "The Ryazan state radio engineering university"*
*Ovechkin G.V., Grinchenko N.N., Osin I.V.*

***UDC** 378*
***GRNTI** 14.35.07, 50.05.19*

**1. Functional purpose, scope, its restrictions**

The remote training course "Computer modeling" is developed according to the federal state educational standard of higher education for the direction 09.03.04 "Program engineering".

The discipline purpose - to train students in application of computer modeling for research of systems. The program of a course provides comprehensive publicizing of approaches and methods of application of computer modeling. In the course of training students have to gain practical skills of creation of computer models by means of universal algorithmic languages of programming. The course is intended for training of students of extramural studies.

As the program environment for development of a remote course Moodle learning management system giving to the developer a wide range of opportunities of use of electronic resources and interactive elements is used. The system provides interactive interaction between all participants of educational process, and also carrying out different types of control of progress, gives opportunities of the analysis of results.

The developed remote training course "Computer modeling" has block and modular structure (fig. 1).

During creation of a remote training course features of the organization of educational process for extramural studies were considered. It is aware most fully and the educational and methodical materials providing their consecutive and independent studying at individual speed are visually presented. The forum, an exchange of messages as interactive communicative elements provide additional information exchange of the student with the teacher of a course, including during the intersession period.

Fig. 1 Main page of a remote training course

**2. Structure and conditions of application**

The remote training course "Computer modeling" consists of 9 modules and has the following structure:

| № | Name of the module | Contents |
|---|---|---|
| 0 | Introduction module. Computer modeling | news forum;<br>forum for communication with students;<br>program of studying of discipline;<br>information about the author of a course;<br>general information about discipline. |
| 1 | Introduction. General concepts of computer modeling | e-book (main theoretical material);<br>thematic test. |
| 2 | Random number generators | e-book (main theoretical material);<br>thematic test. |
| 3 | Methods of check of random number generators | e-book (main theoretical material);<br>thematic test. |
| 4 | Generation of random variables with the set law of distribution | e-book (main theoretical material);<br>thematic test. |
| 5 | Generation of discrete random variables | e-book (main theoretical material);<br>thematic test. |
| 6 | Modeling by the Monte-Carlo method. Planning of machine experiment | e-book (main theoretical material);<br>thematic test. |
| 8 | Final module | task to examination;<br>options of control tasks;<br>form of sending examination. |

| № | Name of the module | Contents |
|---|---|---|
| 9 | Help module | list of references at the rate:<br>list of Internet sources:<br>glossary. |

Educational and methodical materials of a remote course are presented in the form of interactive elements (a task with answers in the form of the file, a forum) and information resources: files of the e-book).

The main electronic resources can be studied directly in system, to keep on the local computer for more detailed studying in the individual mode, if necessary – to unpack.

Interactive elements allow to focus attention of students on separate fragments of the studied material, to estimate the level of knowledge, to organize interaction of all participants of educational process.

The remote training course "Computer modeling" is approved in educational process of RGRTU.

**3. The used technical means**

Work with a remote training course requires presence at the user of the computer or the mobile device with connection to the Internet, it is recommended to use the Mozilla Firefox or Google Chrome browser.

Viewing of files of various formats, performance of tasks on subjects of a course requires installation of the corresponding software:

programs for viewing of PDF files (Adobe Reader, Foxit Reader);

package of office programs (MS Office, OpenOffice).

**4. Conditions of transfer and sale of program documentation**

Distribution and use of a remote training course "Computer modeling" can be carried out only with the consent of the author.

Reference to a course: Computer modeling

The remote course can be transferred to the interested person or the organization on the basis of the contract according to the current legislation.

Concerning acquisition it is possible to address in FGBOOU WAUGH "The Ryazan state radio engineering university".

Address: 390005, Ryazan Gagarin St., 59/1

Phone: (4912) 46-04-37

E-mail: cdo@rsreu.ru

## ADVERTISING AND TECHNICAL DESCRIPTION "An electronic methodical grant to laboratory works on a course "Bases of designing of electronic means. Transformers" (directions: 11.03.03 - "Designing and technology of electronic means" and 11.03.04 - "Electronics and a nanoelectronics", a profile – a specialist programme)"

*FGAOOU WAUGH "The southern federal university"*

*Palij A.V., Zamkov E.T.*

***UDC** 621*

***GRNTI** 47.14.17*

**1. Functional purpose of a product, area of its application, its appointment**

Electronic methodical grant to laboratory works on a course "Bases of designing of electronic means. Transformers" contains classification of transformers, the description of carrying out calculation of their parameters and characteristics and it is intended for the students who are trained in the directions: 11.03.03 - "Designing and technology of electronic means" and

11.03.04 - "Electronics and a nanoelectronics", and also for experts in the field of designing of electronic means.

The transformer — the electromagnetic device having two or more inductively connected windings and intended for transformation by means of electromagnetic induction of one or several systems of alternating current to one or several other systems of alternating current. At classification of transformers they are divided into the groups which are possessing the general properties and carrying out close functions.

*Transformers of food* are intended for transformation of an alternating voltage of primary source to any other values of tension necessary for normal functioning of the equipment. They can be divided into three subgroups: low-power transformers with an output power less than 1 kW and no more than 1000 V (are widely applied in REA and as a part of the sources of secondary power supply (SSPS) of the equipment of different function); powerful transformers of food with an output power more than 1 kW (in REA are applied only to powerful power supplies of transmitters and amplifiers); high-voltage transformers which tension on windings exceeds 1000 V or windings of which are under high potential (are used in REA as a part of rectifiers for power supply of magnetrons, electron beam tubes etc.).

Borders between these groups are conditional and generally are defined by at what power and what tension there is a change of a design of the transformer, i.e. change of a design of a magnetic conductor, insulating materials, brands of wires etc.

The design of transformers of food is influenced significantly by frequency. Therefore in addition they are classified by the frequency of the feeding tension, for example the transformers working from a network 50 or 400... 1000 Hz. Transformers in this case call network unlike converting, used in static converters which find broad application in recent years.

In static converters transformers work in the mode other than the mode in which work network, and at other frequencies, usually much higher (for reduction of the sizes of the transformer). Frequency at which the transformer works, is defined not by the frequency of a network, but admissible frequency for a magnetic conductor of the transformer which is a part of the generator (at design of the supply equipment).

On a design (magnetic conductors, frameworks sleeves, protective elements) throttles of filters are close to transformers of food. They have high inductive resistance at a pulsation frequency in rectifiers and the small resistance to a direct current that allows to reduce losses in IVEP filters.

*The coordination transformers* intended for transfer of the variable electric signals bearing useful information for change of level of tension (currents) at preservation of power and the minimum distortion of a signal. Together with active elements, for example transistors, these transformers are a part of the amplifiers of power used for a speech transmission and music which range of frequencies is ranging from • 30... 50 Hz to 3... 20 kHz.

*Pulse transformers* which basic purpose consists in that under the influence of currents (tension) operating in primary winding to develop short impulses of the set form at the exit or to transform impulses with necessary change of level of tension and current.

Use of transformers in REA and requirements to them. In REA there are cascades and devices for which power supply various constants and variable tension are required. Usually powerful primary power supply has one tension of alternating current. Therefore any radio-electronic device has to contain a difficult power supply system in which transformers, rectifiers on the different tension and capacities, converters of a direct current of one tension enter a direct current of other tension, etc.

Transformers of food are intended for transformation of electric energy with the set accuracy on tension. They have to have high reliability, the minimum sizes, weight or cost and an admissible overheat. Requirements of reduction of weight and dimensions of transformers of food and increase of reliability are inconsistent. Now for improvement of mass-dimensional characteristics of IVEP static converters in which transformers of works the increased frequencies, for example to 200 kHz take root more and more widely.

In many cases coordination transformers rabotayui at the low powers therefore their overheat is insignificant. Transformers of coordination are widely used in household REL. Because of considerable dimensions and weight in REA of a special purpose on integrated circuits they are applied seldom.

Pulse transformers I carry out the functions similar to functions of transformers of coordination, on in relation to pulse signals, for example, lasting from 0,2 to 100 microsec therefore in them especially strict requirements are imposed to inductance of primary winding, inductance of dispersion and own capacity of a winding. Proceeding from admissible distortions of a form of an impulse to formuliruyutsyatrebovaniye to those parameters of the transformer on which electric calculation and the choice of a design is based. Pulse transformers are widely used in REA, including on IS. Therefore are developed and the unified pulse transformers and blocks of pulse transformers intended for work in the microelectronic equipment are issued.

In practice of creation of REA the designer should design transformers taking into account a ratio between the geometrical sizes, magnetic and electric parameters.

In engineering practice use a technique of the choice of a standard size of a magnetic conductor on the output power specified in tables which are made on the basis of predesigns of all parameters, in relation to different materials of a magnetic conductor and frequency.

Substantial increase day off of power of the transformer at the set dimensions can be connected with increase in frequency, but for the transformer working directly from a network, this parameter it is impossible to vary as frequency is set. In this sense especially unprofitable case takes place with a frequency of network of 50 Hz which is the most widespread as it is widely used for land transmitters, the COMPUTER, household REA, the reception centers etc. When designing transformers for the onboard equipment of a condition for reduction of dimensions are facilitated as in this case the frequency of a network is equal to 400 or 1000 Hz.

The expressions received in work allow to determine the dimensional power of the transformer and to choose a magnetic conductor standard size at different schemes of straightening and then to carry out constructive and electric calculation of the transformer. As a result of constructive and electric calculation of the transformer it can turn out that losses in a magnetic conductor and windings at the set output power lead to the inadmissible overheat worsening reliability. Increase in temperature of an overheat by 8 °C reduces transformer service life twice. Such case can be at average magnetic and electric parameters on the basis of which the standard size of a magnetic conductor is chosen and which have approximate values.

The purpose of work is studying of properties of pulse transformers and interrelation of parameters of transformers, and loadings with distortion of a form of the transformed impulses; studying of features of work of magnetic materials in the pulse mode and research of dependence of magnetic permeability on duration of an impulse, size of an increment of induction, frequency of repetition of an impulse; acquaintance with design documentation on pulse transformers; studying of dispersion of parameters of the transformer with application of a statistical method; processing of results of measurement; acquisition of skills of use of planning of complete factorial experiment to research of parameters of pulse transformers.

Using the literature developed by the program, and also the appendix it is necessary to get acquainted with types of distortions of a signal of pulse transformers, processes in magnetic material at pulse magnetization, connection of parameters of an equivalent circuit of the transformer with distortion of impulses, designs of transformers, method of statistical processing of experimental data, order of planning and carrying out complete factorial experiment, to study a laboratory task and a technique of measurement of parameters of the transformer.

**2. The used technical means**

PEVM, system programs (windows), built-in Matlab language.

**3. Special conditions and requirements of organizational, technical and technological character**

For educational process with use of this software product there has to be an existence of a display class (not less than 10 workplaces), the trained educational support personnel.

**4. Conditions of transfer of documentation or its sale**

Documentation can be transferred on the contractual conditions stipulated in each case.

## ADVERTISING AND TECHNICAL DESCRIPTION "An electronic methodical grant to laboratory works on a course "Bases of designing of electronic means. Resistors" (directions: 11.03.03 - "Designing and technology of electronic means" and 11.03.04 - "Electronics and a nanoelectronics", a profile – a specialist programme)"

*FGAOOU WAUGH "The southern federal university"*
*Palij A.V., Zamkov E.T.*

***UDC** 621*
***GRNTI** 47.14.17*

**1. Functional purpose of a product, area of its application, its appointment**

Electronic methodical grant to laboratory works on a course "Bases of designing of electronic means. Resistors" contains classification of resistors, the description of carrying out calculation of their parameters and characteristics and it is intended for the students who are trained in the directions: 11.03.03 - "Designing and technology of electronic means" and 11.03.04 - "Electronics and a nanoelectronics", and also for experts in the field of designing of electronic means.

Resistors are among the most mass products of the electronic and computing, systems (EC,S). Function of resistors - regulation and distribution of electric energy between chains and elements of schemes. Now are created and are developed a large number of types of resistors with high electric and operational characteristics.

All resistors are subdivided into constants and variables.

In turn constant resistors depending on appointment are subdivided into two groups: general and special purpose. Variable resistors depending on appointment are subdivided on tuning and adjusting.

Also resistors are classified by the material applied in a resistor element.

Carbonaceous and borouglerodisty resistors contain the carrying-out element which represents a film of pyrolitic carbon, the ceramic basis and two contacts. Metalfilm, metaldielectric, metaloxide on a design coincide with carbonaceous, only as a resistive element the film of metals (nickel, chrome, vanadium, etc.) is used

Composite resistors happen film and volume. The resistive element represents them the heterogeneous system from several phases received by mechanical mixing of the carrying-out component, for example, of graphite with organic binding (phenolic, radio pitches), fillers, softener and a hardener. In wire resistors the resistive element is carried out from a wire with a high specific resistance. Depending on a design constant resistors are carried out uninsulated, isolated, pressurized and vacuum.

Important parameters of the resistor are resistance, rated power and extreme tension. Rated power is understood as the largest power which the resistor can disseminate in the set conditions during a warranty period of service. Value of rated power of dispersion depends on a design and physical properties of material.

The disseminated power depends also on the nominal resistance of the resistor which determines working tension.

During the operation of the resistor in chains of alternating current at high frequencies parasitic effects begin to be shown.

For expansion of frequency range of resistors it is necessary to reduce parasitic inductance of LR and capacity of CR of a resistive element and parasitic inductance and capacity of conclusions.

In chains of alternating current in the resistor there are own noise.

Own noise of resistors consist of thermal and current noise. Level of noise is measured by the electromotive force (EMF) of noise or tension of noise.

Emergence of thermal noise is connected with the fluctuations and changes of the volume concept of electrons in a resistive element caused by their thermal movement. Besides thermal noise which level is defined generally by temperature and resistance of a resistive element and does not depend on the proceeding current, in a resistive element at its inclusion under electric loading there are specific current noise caused by fluctuations of contact resistance between the carrying-out particles, and also cracks and not uniformity of a resistive element. Level of noise *of D* is defined by the relation of the operating value of a variable component of tension of noise *E* to the enclosed tension.

Resistors are the most often used elements in the various radio-electronic equipment. The radio equipment can be and work in the conditions of frigid, temperate, arid and humid tropical climate, be affected by radiation and other factors. Change of resistance, at the same time, from time is characterized by aging coefficient.

Mathematical forecasting of quality of resistors with use of a method of recognition of images is made depending on operating conditions of EVA (land, space, sea). Customers impose various requirements to reliability and stability of element base, i.e. resistors, condensers, integrated circuits, etc. The key parameter characterizing reliability of work of element base is service life. To measure experimentally service life of an element it is quite difficult and long in time. Therefore now there are various mathematical methods of forecasting of reliability of the EVA elements.

The most widespread method of forecasting of service life of the EVA elements is the method of recognition of "images".

Now the technique of forecasting of stability of the resistor, i.e. aging coefficient is rather in detail developed. Researches showed that there is a number of parameters which values are korrelyatsionno connected with aging coefficient. Such parameters are the infrared radiation and level of current noise which presence is defined by microinhomogeneities and leads to gradual change of resistance.

When designing EVA the customer imposes strict requirements to tension of noise of the resistor (i.e. sets an admissible interval), thereby defines requirements to stability of the resistor. The already set interval, the is more stability of the resistor. At the same time degree of risk of the customer is minimum, but degree of risk of the manufacturer increases, and the percent of an exit of suitable elements decreases. Therefore the cost of production of the resistor increases. For definition of criterion by which the validity of resistors will be estimated it is necessary to plan and make experiment.

The technique of forecasting includes the following stages:

planning and statement of experiment;

processing of results of experiment;

"training", i.e. identification of signs which use will allow with the results set in a probabilistic interval to separate "image" of a suitable or unusable element by the chosen criterion;

carrying out tests of the subsequent products and individual forecasting of their quality on the basis of results of "training".

Planning of experiment is carried out on the basis of the previous experience and the analysis of physical essence of processes. At the same time signs *of XI, X2* which are subject to measurement have to be chosen. Using these signs, it is supposed to carry out forecasting of the parameter Y defining "image" of an element of this or that quality in the elementary case there can be one sign. In actual practice often it is necessary to use several signs. The number of

experiences which has to be planned, is defined by requirements to the accuracy of an assessment of a sign of the predicted parameter and correlation communication between them.

After experiment is planned, it can be put, and the massif (set) *N* values of parameter, for example the massif of values of level of current noise can be received. In laboratory work the massif of values of tension of noise and coefficients of aging is generated in the COMPUTER depending on resistor type.

Before "training" it is useful to carry out statistical processing of results. Grouping of results and drawing up the correlation table is for this purpose made.

Average value of an interval is appropriated to the values received from experience which appeared within these intervals. Then according to the table where all measurements contain, are selected such which appear in these intervals, and their quantity which is designated as *N* is counted. It repeats for all combinations of values of intervals.

If experiment is planned correctly, i.e. the sign displays value of parameter or between them there is a dense correlation communication, then as a result of this processing value close to unit will be received.

The following stage is finding of a combination of values of signs or detection of value of function from value of signs which allow to predict probabilistically value of the predicted parameter or to classify this value, i.e. to refer it to this or that category.

If forecasting of quality of resistors is made on one sign, then process of training is reduced to finding of value of the sign allowing to classify value of parameter. For example, if to use as a sign current noise, then it is necessary to find value at which the resistor can be carried to an image of stable.

There is a final probability of wrong classification. Stable resistors can be carried to a class of unstable. It is accepted to call probability of such wrong classification "risk of the supplier". Unstable resistors can get to category of stable and will be accepted by the customer as stable. The probability of such wrong classification is called "risk of the customer". Thus, the sense of training at one sign consists that such value of a sign which has to provide the stipulated risks of the supplier or customer is chosen. In most cases the most admissible risk of the customer makes a reservation.

The most "rigid" value of a sign when training will be under a condition if with high confidential probability the most admissible value of risk of the customer is set. For performance of procedure of training the correlation table can be used. It is necessary to find conditional function of distribution provided that values of a sign are equal less than the considered value.

For completion of training it is necessary to determine a confidential interval for risk of the customer by the set confidential probability. If the received values of risk of the customer and confidential borders of this risk at the set confidential probability correspond demanded, then process of training can be considered finished and the chosen value of noise can be used at the subsequent tests for quality forecasting.

**2. The used technical means**

PEVM, system programs (windows), built-in Matlab language.

**3. Special conditions and requirements of organizational, technical and technological character**

For educational process with use of this software product there has to be an existence of a display class (not less than 10 workplaces), the trained educational support personnel.

**4. Conditions of transfer of documentation or its sale**

Documentation can be transferred on the contractual conditions stipulated in each case.

## ADVERTISING AND TECHNICAL DESCRIPTION "An electronic methodical grant to laboratory works on a course "Bases of designing of electronic means. Condensers"

*FGAOOU WAUGH "The southern federal university"*
*Palij A.V., Zamkov E.T.*

***UDC** 621*
***GRNTI** 47.14.17*

1. **Functional purpose of a product, area of its application, its appointment**

Electronic methodical grant to laboratory works on a course "Bases of designing of electronic means. Condensers" contains classification of condensers, the description of carrying out calculation of their parameters and characteristics and it is intended for the students who are trained in the directions: 11.03.03 - "Designing and technology of electronic means" and 11.03.04 - "Electronics and a nanoelectronics", and also for experts in the field of designing of electronic means.

Electric condensers are one of the most mass types of radio components and are widely used in the electronic equipment. The electric condenser is the system from two or more plates divided by dielectric intended for creation of electric capacity between facings. In the condenser there is an accumulation of electric energy. At connection to tension facings in dielectric there is a polarization process consisting in the focused shift of charges in electric field. Depending on dielectric type electrons, ions, dipoles, kernels, polar groups of molecules can participate in polarization.

In real dielectrics, as a rule, several different types of polarization always take place. Displaced a charge in dielectric connect part of charges on the facings arriving from tension source therefore the condenser accumulates potential energy - gets electric charge.

By the form dielectric condensers can be subdivided into the following groups:

- KI0... KI9
- K20... K29
- K30... K39
- K40... K49
- K50... K59
  - ceramic;
  - glass, glass-ceramic, stekloemalevy;
  - mica;
  - paper;
  - oxidic (electrolytic);
  - K6Q... K69 - air, gaseous;
  - K70... K79 - film.

Capacity of the condenser is defined as the charge relation to tension attached to facings. Value of capacity is marked on the condenser with the indication of a tolerance zone or dispersion. The size of capacity of the condenser depends on temperature, owing to dependence of dielectric permeability on temperature, linear expansion of metal of facings and material of dielectric. For an assessment, change of capacity of the condenser from temperature the temperature coefficient (TKE) Showing as far as capacity at increase in temperature by one degree changes serves.

Depending on nature of change the temperature coefficient of capacity can be positive, negative and close to zero. Sometimes for marking of temperature coefficient condensers are painted in different colors (blue, blue, green, red, etc.). Usually on the case of the condenser alphanumeric marking is specified.

At turning on of the condenser in a chain of alternating current the part of energy from a source of electric energy is lost in the form of heat because of through conductivity, power consumption on polarization, losses of energy in conclusions and windings, etc. The size of losses in the condenser is estimated by a tangent of angle of dielectric losses, good quality and jet power. Losses of energy in the condenser are connected with rated voltage. The rated voltage of the condenser is understood as the maximum permissible tension of a direct current (or the sum of constant and variable currents) at which the

condenser can work during a warranty period of service at a maximum and admissible working temperature.

Because of presence of conductors in the design condensers possess inductance. This inductance needs to be taken into account at high frequencies in pulse chains. The simplest equivalent scheme of the condenser at high frequencies contains consistently included nominal capacity, parasitic inductance and resistance of facings. Capacitance of the condenser decreases with reduction of frequency, and inductive increases. The minimum of full resistance is defined by active resistance, and the frequency corresponding to a minimum is resonant and determines the extreme working frequency of the condenser.

Condenser parameters in strong degree are influenced by external factors, such as humidity of air, temperature, radiation. Therefore eventually the capacity of the condenser changes. This change is characterized by aging coefficient.

In the probable analysis and calculation of change of capacity of the condenser at long operation taking into account external factors such external factors as temperature, humidity, radiation, mechanical influences, etc. are considered. These factors influence also other radioelements. All key parameters of condensers are exposed to change: capacity, isolation resistance, resistance of losses, etc. In many cases it is not enough that the condenser only kept working capacity, and it is required that its key parameters did not go beyond certain limits. Especially strict requirements are imposed to stability of size of capacity and resistance of losses of the condensers used in resonant contours, filters, lines of a delay, etc.

Researches show that resistance right after production of condensers is a random variable. Besides, it is subject to big casual changes at change of temperature, effect of moisture and during the long work. For example for paper condensers at increase in temperature from nominal rate to maximum, stipulated in THAT, resistance decreases by 20 - 100 times. At the same time the size of capacity changes in much smaller limits - to 10% in relation to those borders which were observed at once, after production.

Thus, condensers are the least stable and least exact radioelements from among used in REA and the most critical to the modes and working conditions. This instability in use is especially noticeable eventually. Therefore sometimes there is a need of the probabilistic analysis of a possibility of use of this or that type of condensers taking into account initial values of parameters, their deviations, instability and aging.

Now techniques of an assessment of all parameters of condensers after a certain term of operation are developed. As the technique of the analysis of deviations is identical to all parameters, we will consider further it in relation to one parameter - capacity.

Capacity can have the initial, reversible and irreversible collecting deviations under the influence of external factors. Let's consider that the probable description of action, each of factors is known and the task consists in definition of the resulting effect. Let's believe that are known to us W(C0), t (C0) and D (C0) for normal conditions at once after production of condensers, and also W(LC), m (Lc), D (Lc), W(BC), m (Bc), D (BC) and W(LB), the C LB), D (LB), respectively: the temperature coefficient of capacity (TCC), aging coefficient, the coefficient characterizing additional leaving of capacity under the influence of moisture, function of distribution of probability that the argument will matter X, a population mean of parameter X, dispersion of parameter X.

Having considered the possibility of use in this calculation of the Monte-Carlo method on the example of calculation of capacity, we will receive casual value of capacity which does not give an idea of probabilistic characteristics.

Therefore in this work calculation of capacity is made repeatedly, for calculation of the next value. If selections are taken not randomly, and so that reflect distribution function peculiar to these values, then the calculated values of capacity will represent set on which we can judge its probabilistic characteristics.

Thus, the sequence of calculations for the Monte-Carlo method provides the following stages:

- finding of set of the concrete values reflecting functions of distribution with such amount of values which is recognized as expedient;
- substitution in a random way in settlement expression of all parameters entering a formula from the found set and carrying out calculations. As a result of these calculations N values C will be received;
- the statistical processing of set of values consisting in definition of estimates of m (C), D (C) and W (C).

The Monte-Carlo method is realized in the form of the program written on SI ++.

For performance of laboratory work it is necessary to enter basic data into the car. It is N - the number of experiences (N = 500... 10000), T - the range of working temperatures (-60... +120), t - time of operation of EVS (5000... 15000 hours).

The more N, the more precisely will be results of numerical experiment. In the program four massifs of basic data are used, in each of which there are **N** elements. It is the massif of initial values of the capacities distributed evenly since right after production of condensers function of distribution of their capacity can be considered uniform within the admissions determined by TU. Other three massifs are massifs of Lc values - TKE, coefficient of aging of Vs, coefficient of LB characterizing additional leaving of capacity under the influence of moisture.

After input in the car of basic data automatically, by means of a random number generator, massifs according to their functions of distribution are created. And then N times occur calculation of capacity, and every time, by means of a random number generator, new selection of casual values of basic data undertakes. Thus, N new values of capacity pay off. Then statistical processing of the received results is made - there is m (C), D (C) , the histogram of distribution of size of capacities is under construction.

Thus, if to compare the received average value of size of capacity of m (C) and its dispersion of D (C) at influence of temperature, time and humidity of environment and initial parameters, it is possible to make the conclusion about its suitability for EVA.

Using literature and the present description in laboratory work it is necessary to answer control questions, it is the admission to laboratory work.

- To investigate influence of ambient temperature on capacity size.
- To investigate influence of frequency on the size of losses.
- To investigate dependence of reliability of the condenser on external factors.
- To coordinate types of the studied condensers with the teacher.
- To choose the capacity size, limits of its dispersion and the number of experiences.
- To choose and coordinate with the teacher limits of change of coefficient of aging, temperature coefficient, coefficient of humidity and an interval of working temperatures.
- Using the program of the analysis to calculate and construct dependence of a population mean of size of capacity of the condenser on operation time.
- To compare to initial value of size of capacity.

2. **The used technical means**

PEVM, system programs (windows), built-in Matlab language.

3. **Special conditions and requirements of organizational, technical and technological character**

For educational process with use of this software product there has to be an existence of a display class (not less than 10 workplaces), the trained educational support personnel.

4. **Conditions of transfer of documentation or its sale**

Documentation can be transferred on the contractual conditions stipulated in each case.

## ADVERTISING AND TECHNICAL DESCRIPTION "Program of Calculation of Parameters and Characteristics of Basic Logical Elements of the Emitter and Connected Logic"

*FGAOOU WAUGH "The southern federal university"*
*Palij A.V.*

***UDC** 621*
***GRNTI** 47.41.99*

1. **Functional purpose of a product, area of its application, its appointment**

The program contains the description of carrying out calculation of parameters and characteristics of Basic logical Elements of the emitter and connected logic within the course "Circuitry of Electronic Means" for the students who are trained in the directions: 11.03.03 - "Designing and technology of electronic means" and 11.03.04 - "Electronics and a nanoelectronics", and also for experts in the field of circuitry.

The description of Basic logical Elements of the emitter and connected logic which are widely applied in equipment PLIC (programmable logical integrated circuits) is provided in work. The short theoretical part is given and key parameters and characteristics are described.

The element base of electronic means is generally made by integrated circuits. Since their invention integrated circuits constantly are improved and become complicated. The characteristic of complexity of integrated circuits is the integration level estimated by either number of Basic logical Elements, or number of transistors which can be realized on a crystal.

At the initial stage of development of digital electronics the large number of the various circuitry decisions realizing the main logical operations was developed. However wide practical use was received only by some of them. These elements in the best way combine a row important as for the consumer, and the manufacturer of characteristics.

Now when developing integrated circuits the greatest distribution was gained by the following Basic logical Elements:

- diode-transistor logic (DTL);
- transistor-transistor logic (TTL, TTLSh);
- emitter and connected logic (ECL);
- integrated and injection logic (I2L);
- logic on the same field transistors (n-MOP and P-MOP);
- logic on complementary field transistors (KMOP).

The first three types use bipolar transistors, the last two – field.

Distribution of several types of logic which are carrying out the same logical functions is explained by distinction of their main characteristics that depending on technical requirements and service conditions allows to build electronic means the required parameters.

Various characteristics of currents or tension can be delivered to values of logical functions and arguments in electric circuits in compliance. It can be both their some established sizes, and parameters of electric impulses. According to it distinguish potential and pulse ways of representation of logical variables.

At a potential way of representation to values ravine. 0 and ravine. 1 put two various levels of tension or current in compliance. Depending on what of these levels is specifically put in compliance to values 0 and 1, distinguish positive and negative logicians.

In positive logic to value ravine. 1 put also compliance bigger, and to value the ravine. 1 – smaller value of tension or current. In negative logic on the contrary – to great values of an electric signal there correspond values the ravine. 0, smaller – values the ravine. 1. This definition is fair for any polarity of the used tension or any directions of course of currents.

The integrated circuits realizing ESL are the most high-speed, but the power consumed by these elements exceeds the power of the TTL elements. However flexibility of circuitry decisions rather just allows to realize difficult logical functions.

ESL has the highest speed. But together with it at it the highest work of switching. ESL has non-standard logical levels:-0,8 B and-1,7 V. are realized by ESL in the form of the differential cascades working in the key nonsaturated mode (fig. 1).

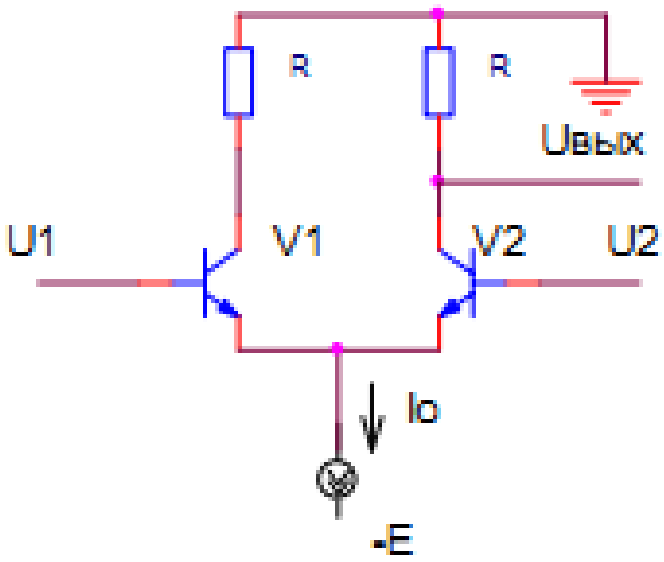



Fig. 1. ESL differential cascade

Parameters of the cascade are selected so that at the open V2 transistor and the closed transistor VI the V2 transistor did not enter the saturation mode. For this purpose the condition has to be satisfied:

$$Uvykh = E - I0R > U2. \qquad (1)$$

That is tension of the collector base of the V2 transistor has to be more than zero and the transistor will not enter the saturation mode. The ESL logical element has the appearance shown in fig. 3.15. Output variables are equal in positive logic:

$$F = A + B, (2)$$

$$\overline{F = A + B}, (3)$$

Two-level designs are characteristic of ESL. With their help additional logical functions (fig. 2) are realized.

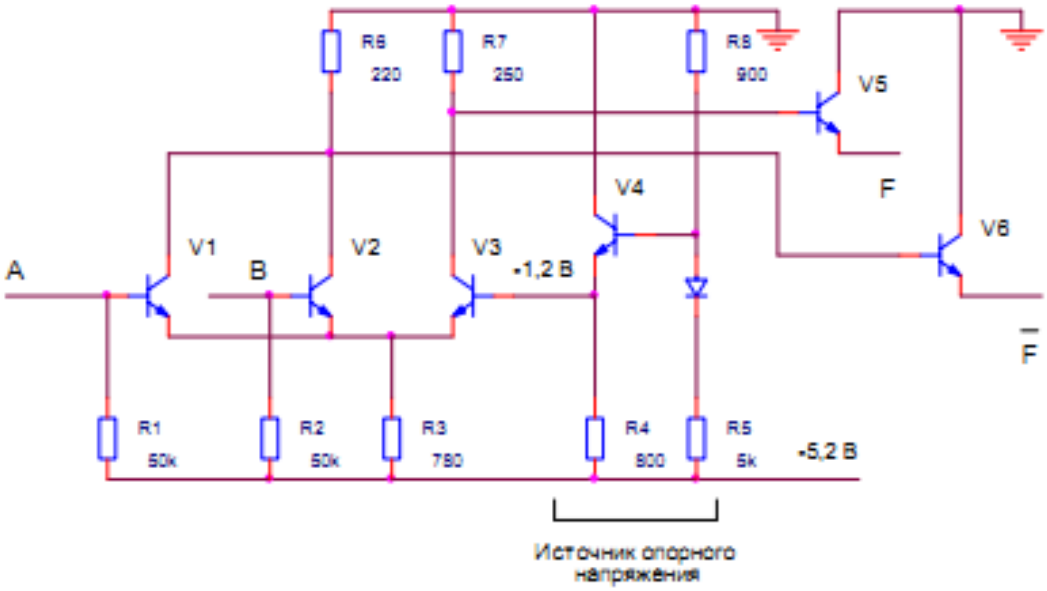



Fig. 2. ESL logical element

2**. The used technical means**

PEVM, system programs (windows), built-in Matlab language.

3. **Special conditions and requirements of organizational, technical and technological character**

For educational process with use of this software product there has to be an existence of a display class (not less than 10 workplaces), the trained educational support personnel.

4. **Conditions of transfer of documentation or its sale**

Documentation can be transferred on the contractual conditions stipulated in each case.

## ADVERTISING AND TECHNICAL DESCRIPTION "The Electronic Operated Course "Marketing Bases" (the Direction of Preparation 08.11.00 — the Public Municipal Administration, a Profile — a Bachelor Degree)"

*FGAOOU WAUGH "National research N.I. Lobachevsky State University of Nizhni Novgorod"*
*Suhodoeva L.F., Stozharova T.V.*

***UDC 378***
***GRNTI 14.35.07, 06.75.55***

**1. Functional purpose of a product, scope, its restrictions**

Educational and methodical development of the electronic operated course "Marketing Bases" is created as a part of the main educational program for the direction of a bachelor degree "The public and municipal administration" for electronic training and introduction of remote educational technologies within the program of increase of competitiveness of "National research Nizhny Novgorod university of N. I. Lobachevsky".

The Marketing Bases WEB PORTAL is intended for electronic training of students of economic specialties of university in discipline of a basis of marketing in four modules. The first module is intended for the first-year students studying at school an economy course according to the reduced program and also for users, external in relation to the Nizhny Novgorod university, for example, for the school students who are prepared for Unified State Examination. The second and third modules are developed for training of bachelors, the fourth – for training of masters.

The structure and the maintenance of the WEB PORTAL presents a set of the author's websites in the form of complexes – simulators for the following modules of the course "Marketing Bases":

- Methodological bases of marketing.
- Strategic and operational decisions in marketing.
- Management of marketing activity.
- Organization and planning by marketing activity.

The structure of each module of the electronic operated course consists of the following sections:

1. Theory of a question.
2. Practical situations.
3. Tasks for the individual decision.
4. Tests for self-examination.

The electronic course "Marketing Bases" allows to form professional competences at students. The simulator for discipline is for this purpose entered. The exercise machine distinguishes students and external users on the basis of the registration data which are available in system. At certain stages students get a job with the exercise machine additional blocks of theoretical information and practical tasks. Each student can estimate knowledge of questions for self-checking.

Main units of the exercise machine are:

- The theoretical block forms knowledge of students and includes the following subjects on modules:

- purposes, tasks and basic concepts of marketing;
- concepts of management of the state and municipal marketing;

- types and objects of marketing;
- strategy of target marketing;
- pricing in system of marketing;
- marketing communications;
- system of market researches;
- methods of market researches;
- organization of the public and municipal service of marketing.

• The practical block forms abilities at students in a format: model of the optimal solution, "he agrees or not with the decision", "specify the correct answer", "use mathematical model".

• The estimated block shows possession of the student of the system analysis and techniques of development of marketing strategy on the basis of situational tasks and cases with problem tasks.

For improvement of the analysis of information it is very important to establish intelligent connection, to structure new data, to study scientific, educational and other literature and to create the vision of a problem.

• Examples of the solution of situational tasks allow the student to seize art of use of instruments of marketing and allow to reveal formation of competences.

• Tasks for the independent decision in the on-line mode in specially allotted fields allow to reveal the level of assimilation of knowledge.

• Problems of total control are intended for the independent decision. Record of the decision is carried out in any form. The solved tasks go to the teacher of e-mail to check.

• Control questions for self-examination

• The operating control in the form of tests with open questions and problem tasks allows to carry out intermediate certification of students.

The maintenance of the Portal is author's development and answers the purposes of development of discipline of "A marketing basis": formation at students of marketing thinking and ability to apply methods and models at adoption of optimal marketing solutions, knowledge of modern software products and Internet technologies at the solution of marketing problems of economy of territories.

From the point of view of a program system the WEB PORTAL provides carrying out educational programs in the mode of electronic interactive training. The portal makes available the maintenance of an educational and methodical complex of a concrete subject matter and provides conditions for their system integration. In the course of training with use of opportunities of a portal the multilateral communications of new type between students, teachers and administration of university based on modern information technologies, multimedia means and means of a video conferencing are provided.

The program system provides functioning of universal options of a portal of electronic training, universal options of the website of a separate educational and methodical complex, the special options of the website of a separate educational and methodical complex including theoretical and practical modulations of situations, to the corresponding tasks of the program "National research Nizhny Novgorod university of N. I. Lobachevsky" in the directions of economic and management training of students within the Program of increase of competitiveness of NNGU.

Developed and the operated course "Marketing Bases" realized electronic as a part of the main educational program on the basis of electronic training and remote educational technologies realized by Institute of open formation of NNGU allows:

1. To train in receptions and methods of effective work in the market in the remote districts of the area by means of models of research of the market and creation of the marketing environment of municipality.

2. To save money on preparation of educational content and the organization of educational process for the residence by mastering methods of use of instruments of marketing.

3. To use the interface, convenient for users, and to be able to use modern software products and the Internet - technologies to a possibility of work in system of electronic commerce.

The following subsystems are developed for training in this electronic course:

- Subsystem of development of content.
- Testing subsystem
- Communication subsystem.
- Monitoring subsystem.
- Server of reports.

Program systems of administration automate creation and maintenance of objects of system of distance learning:

- Protection of the server against unauthorized access
- Subsystem of registration and processing of applications.
- Subsystem of management of groups.
- Subsystem of the planned schedule and individual plan of training.

Program systems of the website:

- Subsystem "Work with a training material"
- Subsystem "Testing"
- Subsystem "Communication and consultations"

All software products necessary for functioning of system and acquired according to the license from the third parties belong to NNGU.

All exclusive rights to the portal developed in the course of work belong to NNGU. All materials transferred as results of works are free from the obligation of the third parties.

**2. Hardware-software requirements**

The developed program system functions in the following program environment:

- The server with the Windows operating system
- Apache web server
- PHP language of version 4 or later
- MySQL database of version 4 or later
- Portal Server 2003.

Software of the user computers:

- Not below - an operating system of Microsoft Windows XP or 2000 Professional;
- Browser Internet/intranet of the Microsoft Internet Explorer 6.0 pages above; Opera 10.60, Farefox 3.6.6 or above.
- Microsoft Office 2003 or above.

Development tool of maintenance of the LMS Moodle portal. Additional opportunities - own program modules in version 4 PHP language. The volume of development IS 2017,28 MB.

**3. Special conditions and requirements of organizational, technical and technological character**

Work with electronic educational and methodical development requires the computer having Internet connection and the software allowing to open and look through files in a format ".pdf" (for example "Acrobat Reader" or another. Type of the installed operating system (Windows). Development is located on the server of the Nizhny Novgorod state university of N. I. Lobachevsky and is available to the registered users after registration procedure passing.

**4. Conditions of transfer of program production or its sale**

Concerning use of electronic simulators for the course "Marketing Bases" to address the developer by e-mail kommercia@bk.ruor to the address: 603950, Nizhny Novgorod, ul, B. Pokrovskaya 37, VO Public Educational Institution "National research N.I. Lobachevsky State University of Nizhni Novgorod", IEP, Sukhodoyeva L.F. or malkina@unn.ru or to the address: 603950, Nizhny Novgorod, Gagarin Ave., 23, VO Public Educational Institution "National research N.I. Lobachevsky State University of Nizhni Novgorod", management of informatization of Malkin E.V.

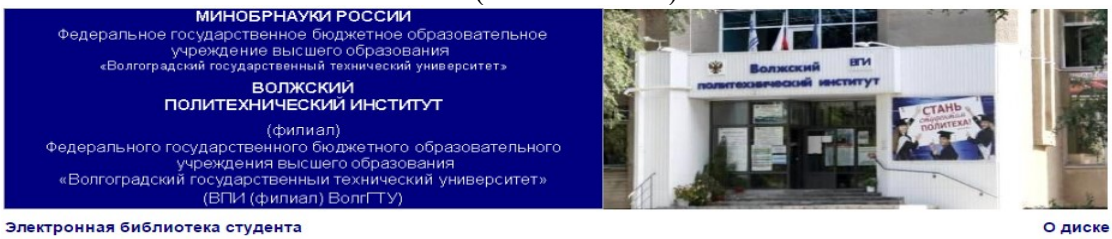
## ADVERTISING AND TECHNICAL DESCRIPTION "The Electronic Resource "Marketing in the World Markets of Goods and Services" (the Economy Direction 38.04.01, Level — a Magistracy)"

*Volga polytechnical institute (branch) of federal public budgetary educational institution of the higher education "Volgograd state technical university"*
*Goncharova E.V.*

***UDC** 339.1*
***GRNTI** 06.56.21, 06.81.55*

**1. Functional purpose of a product, area of its application, its appointment**

The electronic resource "Marketing in the World Markets of Goods and Services" is the manual and contains electronic and text data (1 file: 544 KB).



The electronic manual is developed according to requirements of Federal state standard of higher education and intended for the masters who are trained in the Economy direction 38.04.01. A scope of this electronic resource is educational process at the Volga polytechnical institute (branch) of the Volgograd technical university, masters of internal and correspondence forms of education can act as object of training. The electronic manual is recognized to provide interaction of the master with the training material offered by the teacher, allowing to work as independently, and in audience by means of the last.

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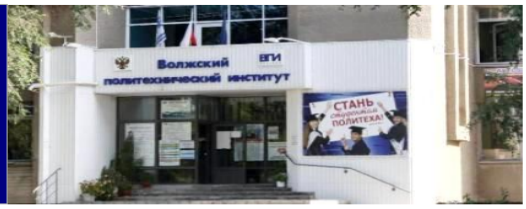


**Электронная библиотека студента** **На главную**

УДК 339.1 (13)
ББК 65.5

Рецензенты:
Доктор экон. наук, доцент Вакарев А. А.
Канд. экон. наук, доцент Коробов С. А.

**О диске**

Издается по решению редакционно-издательского совета Волгоградского государственного технического университета

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Гончарова, Е. В. **Маркетинг на мировых рынках товаров и услуг** [Электронный ресурс]: учебное пособие / Е. В. Гончарова // Электрон. текстовые дан. (1 файл: 544 КБ) - Волжский, ВПИ (филиал) ВолгГТУ, 2016. - Систем. требования: Windows 95 и выше; ПК с процессором 486+; CD-ROM. - номер свид. о регистрации

Содержит основные характеристики маркетинговых исследований мировых рынков, с учетом особенностей типологии и классификации рынков.
Рассмотрены основные принципы и действия при сегментировании мировых рынков товаров и услуг и выбора целевых сегментов рынка. Представлены особенности позиционирования и продвижения товаров и услуг на мировых рынках. Рассмотрена роль диверсификации и дифференциации для этого процесса. Приведено обоснование значимости деятельности транснациональных корпораций на мировых рынках. Приведены темы, вопросы и задания для выполнения на практических занятиях.
Пособие рассчитано на магистров всех форм обучения направления 38.04.01 «Экономика».

**Ключевые слова:** образование в техническом вузе, учебные пособия, мировые рынки, маркетинговые исследования мировых рынков, сегментация рынка, маркетинговая информация, маркетинговые стратегии, позиционирование и продвижение товаров и услуг на мировом рынке

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The electronic resource "Marketing in the World Markets of Goods and Services" is the main training material on discipline "Marketing in the world markets of goods and services".

In an electronic grant characteristics of market researches of the world markets, taking into account features of typology and classification of the markets are submitted, the basic principles and actions at segmentation of the world markets of goods and services and the choice of target segments of the market are considered, features of positioning and advance of goods and services in the world markets are presented, the role of diversification and differentiation for this process is considered, justification of the importance of activity of multinational corporations is given in the world markets.

The structure of the manual reflects the maintenance of the main subjects of a course with breakdown on modules and subjects, with the list of the main cases in point necessary for preparation for a practical training at studying of discipline "Marketing in the world markets of goods and services". The manual corresponds to the training program of discipline and the maintenance of the main competences developed in the course of its studying. Distinctive feature of the manual is systematization of stages of methods and the principles of carrying out market researches in the world markets. The practical aspect of work is expressed in sections of methodology of the choice of a target segment, positioning and advance of goods and services in the world markets.

Open character of market economy and fast development of marketing activity causes need to take into account the competition not only in domestic market, but also a tendency developed in foreign markets, intensity of foreign economic relations of Russia therefore the questions of studying of the international experience of marketing activity reflected in the manual are actual now.

The real electronic grant aims - formation at masters of necessary knowledge of classification of the world markets, roles of marketing activity at advance of goods and services on various types of the world markets, the principles of carrying out market researches and formations of marketing strategy, with the subsequent application of the gained knowledge in practice. The main objectives of the manual are: the help to masters in studying of the main subjects of a course for preparation for a practical training on discipline.

The electronic resource "Marketing in the World Markets of Goods and Services" helps masters of economic specialties with studying of features of marketing activity in the world market, adoption of administrative decisions on formation of effective marketing strategy and ways of advance and positioning of goods and services in the world markets.

The electronic resource "Marketing in the World Markets of Goods and Services" allows, using the gained knowledge in practice, to increase the potential of the Russian economy in the conditions of realization of strategy of import substitution.

**2. The used technical means**

The electronic resource "Marketing in the World Markets of Goods and Services" was created with use of language of a hypertext marking of HTML and does not demand additional installation.

The technical means used during creation of the electronic edition it is the computer with Windows XP OS, the software of MS Word and the visual HTMLReader HTML editor of version 2.5.

**3. Special conditions and requirements of organizational, technical and technological character**

Treats necessary conditions of use of the electronic edition - existence of the personal computer with the processor 486+, Windows 95 OS above with the software Web Browser (Firefox, Opera, IE, etc.), CD ROM. The browser of PDF of documents is necessary for viewing of electronic resources.

**4. Conditions of transfer of documentation or its sale**

All rights for reproduction and distribution in any form remain for the developer.

Illegal copying and use of this product is forbidden.

On all questions it is necessary to address to the Volga polytechnical institute (branch) of VOLGGTU

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Email: library@volpi.ru

## ADVERTISING AND TECHNICAL DESCRIPTION "Realization of a Logiko-probabilistic Method Program

*FGBOOU WAUGH "Omsk state technical university"*

*Savchenko S.O., Semenova A.R.*

***UDC** 510.6*

***GRNTI** 27.03.2019*

**1. Functional purpose of the program, scope, its restrictions**

Logiko-veroyatnostnye methods comprise considerable potential opportunities for risk management and estimates of efficiency of functioning of various systems. These methods already long time are put into practice to analyse reliability and safety structurally and

qualitatively difficult systems. Relevance of the offered approach is caused by a number of advantages:

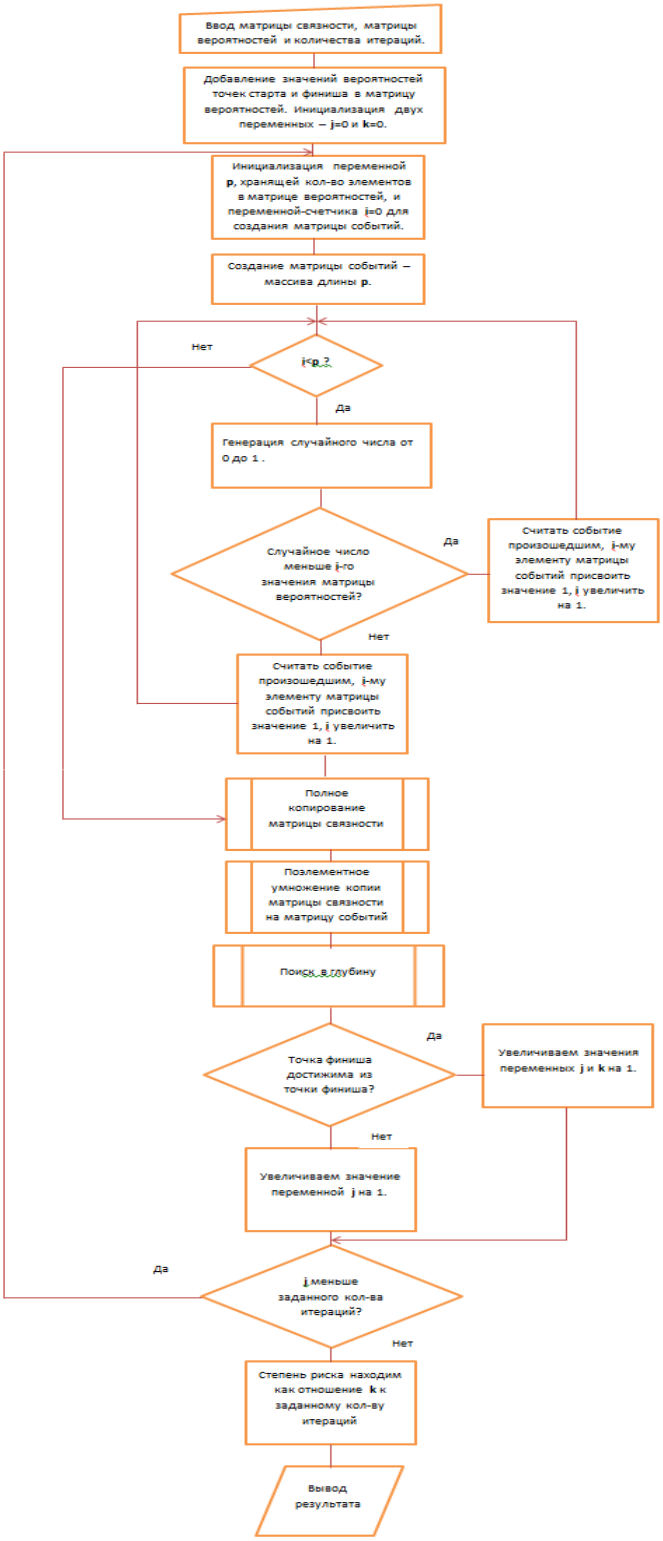
1. This method allows to estimate the level of security of object quantitatively. Also the analysis of safety can be considered as a method of multicriteria optimization.
2. By means of logiko-probabilistic approach it is possible to create model of safe functioning of system of protection, to reveal "weak spots" of system and to range them on safety degree.
3. Use of this method gives the chance to define internal structure of system of protection, giving it lines of structurally simple or structurally difficult system.

The main lack of such approach is an essential volume of labor-consuming logical transformations upon transition from Boolean functions to probabilistic functions for the analysis of difficult scenarios. To solve this problem, that is for the purpose of automation of calculations, the program in the Python programming language was developed.

The choice of a programming language is caused by its advantages:

- simplicity of syntax
- set of additional libraries
- krossplatformennost
- high efficiency

We realize the program on the basis of an example of the analysis of safety of system of perimeter protection of object for which it is necessary to estimate degree of risk and level of security. Algorithm it is possible to present flowcharts in the form:




Let's describe all steps in more detail:

Step 1. We import necessary for work of library **(fig. 1)**:

```
import random
from scipy.sparse.csgraph import depth_first_order
import copy
```

Fig. of 1 Library for work of the program.

— Random – for generation of random numbers;
— Copy – for copying of massifs;
— Depth_first_order – for search in depth in the massif.

Step 2. We set initial parameters – a connectivity matrix, a matrix of probabilities, and also the number of iterations for desirable accuracy. In a matrix of probabilities we add as the first and last line of a point of start and the finish. As these points are always, their values are equal to unit **(fig. 2)**.

```
base_matrix=[[1,0,0,0,0,1,0,0,1,0],
             [0,1,0,0,0,1,0,0,0,1],
             [0,0,1,0,0,1,0,0,0,1],
             [0,0,0,1,0,1,0,0,0,1],
             [0,0,0,0,1,1,0,0,0,1],
             [1,1,1,1,1,1,0,0,0,0],
             [0,0,0,0,0,0,1,0,1,1],
             [0,0,0,0,0,0,0,1,1,1],
             [1,0,0,0,0,0,1,1,1,0],
             [0,1,1,1,1,0,1,1,0,1]]
base_chances=[1,0.20,0.05,0.10,0.10,0.15,0.2,0.05,0.15,1]
iterat=100
```

Fig. 2 Initial parameters.

Step 3. We create a matrix of events by means of a matrix of probabilities **(fig. 3)**. For this purpose in a cycle we generate a random number from 0 to 1 and we touch elements of a matrix of events. If the number is less or equally to value of the current element of a matrix of probabilities, then we consider an event occurred. If the event took place, the element with the corresponding index is equal 1 if it is not present – 0.

```
p=len(base_matrix)
chances=[0]*p
for i in range(p):
        a=random.uniform(0,1)
        if (a<=base_chances[i]):
            chances[i]=1
```

Fig. 3 Creation of a Matrix of Events.

Step 4. We generate a new matrix of connectivity **(fig. 4)**. For this purpose at first we copy an initial matrix of connectivity, and we modify it taking into account a matrix of events - we multiply its elements by elements of a matrix of events. At the same time the new matrix of connectivity remains symmetric, and has on unit diagonal.

```
p=len(base_matrix)
base2_matrix=copy.deepcopy(base_matrix)
for i in range(p):
    for j in range(p):
        base2_matrix[i][j]=base2_matrix[i][j]*chances[i]
        base2_matrix[j][i]=base2_matrix[j][i]*chances[i]
        base2_matrix[i][i]=base2_matrix[i][i]*chances[i]
```

Fig. 4 Generation of a New Matrix of Connectivity.

Step 5. We apply function of search in depth in this matrix of connectivity **(fig. 5)**. If there is a way from a start point to a finish point, function returns unit.

```
if 0 in depth_first_order(base2_matrix,p-1,False,False)
```

The fig. 5 Search Function Application in depth.

Step 6. We initialize a new variable which will be the counter. In a cycle with the number of iterations set on the first step we repeat points from the third on the fifth. In the counter we summarize the values returned by function of search in depth. After performance of a cycle we find risk degree as the attitude of value of a variable counter towards the number of iterations. Security level, respectively, is equal to a difference of unit and degree of risk **(fig. 6)**. For increase of accuracy it is possible to execute this procedure several times, to summarize the received values and to divide into their quantity, thus, having averaged data.

```
def base_func(iterat,base_matrix,base_chances):
        count=0.0
        p=len(base_matrix)
        for k in range(iterat):
            base2_matrix=copy.deepcopy(base_matrix)
            chances=[0]*p
            for i in range(p):
                    a=random.uniform(0,1)
                    if (a<=base_chances[i]):
                        chances[i]=1
            for i in range(p):
                for j in range(p):
                    base2_matrix[i][j]=base2_matrix[i][j]*chances[i]
                    base2_matrix[j][i]=base2_matrix[j][i]*chances[i]
                    base2_matrix[i][i]=base2_matrix[i][i]*chances[i]
            if 0 in depth_first_order(base2_matrix,p-1,False,False):
                    count=count+1.0
        ch=count/iterat
        return ch
a=0.0
n=20
for i in range(n):
    a=a+base_func(iterat,base_matrix,base_chances)
temp=a/n
print('Степень риска ',round(temp,4), ', Степень защищенности ', round((1-temp),4))
```

Fig. 6 Finding of Degree of Risk and Level of Security.

For an assessment of efficiency of this algorithm the corresponding calculations manually were made, the received results were identical. Thus, this algorithm entirely fixes a problem of labor-consuming logical transformations of logiko-probabilistic approach upon transition from Boolean functions to probabilistic functions that does such method simpler and easy in realization.

**2. The used technical means**

The following equipment rooms and software are necessary for work of the program on the computer of the user:

6. ° C: Microsoft Windows 7.
7. COMPUTER type: IBM PC-sovmest. Personal computer.
8. Frequency of the processor is not lower than 1 GHz.
9. Random access memory of 1 GB.
10. Existence not less than 100 MB of an empty seat on a disk.

**3. Special conditions of application and requirement of organizational, technical and technological character**

Conditions of application have to conform to the modern requirements imposed to operation of the software. The program demands the installed WinPython 3.4.3.5 package and can be started from any carrier.

**4. Conditions of transfer and sale of program documentation**

The program for the solution of a problem of optimization of restoration of technical system at regular control of serviceability of reserve elements and documentation to it can be transferred to the interested person or the organization on the basis of the contract with OMGTU and authors according to the current legislation.

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## ADVERTISING AND TECHNICAL DESCRIPTION "Detecting of Persons and Allocation of Their Contours by Method of Probes" Program

*FGBOOU WAUGH "Omsk state technical university"*
*Savchenko S.O., Semenova A.R..*

***UDC** [002:004]:316.774*
***GRNTI** 20.01.2004*

**1. Functional purpose of the program, scope, its restrictions**

Identification of the person on features – one of the most dynamically developing directions in modern society. At first sight it seems that the face recognition is applicable only in such areas as: security systems, criminalistics, computer graphics. But actually, the range of application of these algorithms is much wider: electronic commerce, driving license, control over immigration, personalisation of household devices and so on. All this does actual a problem of a face recognition.

Face recognition – the practical application of the theory of recognition of images which task includes automatic localization of the person in the photo and, in case of need, identification of the person on the person.

We investigate algorithm of detecting of persons and allocation of their contours by method of probes. Methods of object-oriented programming in language C ++ were applied to practical realization of algorithm. In algorithm the OpenCV-library is used it is the library of algorithms of computer sight, processing of images and numerical algorithms of general purpose with an open code extending in the conditions of the license BSD.

For evident representation, we will break algorithm into three main steps and we will in detail sort each of them.

Step 1. Allocation of area where there is an estimated person

In OpenCV library localization of persons in the photo or in a video stream shot by means of Haar's signs is realized. The rectangle where there is an estimated person will be result. Localization is realized by the following function:

```
cvHaarDetectObjects(const CvArr* image,
CvHaarClassifierCascade* cascade,
CvMemStorage* storage,
double scale_factor=1.1,
int min_neighbors=3,
int flags=0,
CvSize min_size=cvSize(0,0) )
```

Figure 1 - Function of localization of persons.

Function returns sequence of all found persons.

Step 2. Arrangement of probes and finding of average color

In the center of the found area experimental points - "probes" vertically settle down. Further we find average color on these points. We will take it for average complexion. Finding of average color:

```
uchar* ptr = (uchar*) (Image24->imageData);
        int i,j,all=0;
        CvScalar FaceColor;
        long r=0,g=0,b=0;
        for(i=3*Image24->height/8;i<=5*Image24->height/8;i++)
                for(j=3*Image24->width/8;j<=5*Image24->width/8;j++)
                {
                        r+=ptr[i*Image24->widthStep+j*3];
                        g+=ptr[i*Image24->widthStep+j*3+1];
                        b+=ptr[i*Image24->widthStep+j*3+2];
                        all++;
                }
        FaceColor=CV_RGB(r/all,g/all,b/all);
```

Figure 2 - Function finding of average complexion.

Further probes move to edges of an estimated face, that is from the center. The border of the person will be found if the probe passes to pixel which color strongly differs from complexion (average color).

The movement of points on the left side of the person (it is similar for side of a face of right):

```
const int Contour_Points        =       60;
const float Face_Color_Delta    =       0.3f;
CvPoint p,p_mem,p_begin;        CvPoint * cvpoints =  new CvPoint[Contour_Points*2];
double k1,k2,k3;
for(i=0;i<Contour_Points;i++)
        {
                p.x=0;p.y=int(((float)Image24->height/Contour_Points)*(i+0.5f));
                for(j=3*Image24->width/8;j>0;j--)
                {
                        r=ptr[p.y*Image24->widthStep+j*3];
                        g=ptr[p.y*Image24->widthStep+j*3+1];
                        b=ptr[p.y*Image24->widthStep+j*3+2];
                        CvScalar Color=CV_RGB(r,g,b);
                        k1=Color.val[0]/FaceColor.val[0];
                        k2=Color.val[1]/FaceColor.val[1];
                        k3=Color.val[2]/FaceColor.val[2];
                        if (abs(1-k1)<Face_Color_Delta || abs(1-k2)<Face_Color_Delta || abs(1-k3)<Face_Color_Delta) p.x=j;
                        else break;
                }
                cvpoints[i]=p;                p_mem=p;
                if (i==0) p_begin=p;
        }
```

Figure 3 – Function of shift of probes on the left side of the person.

Step 3. Creation of a contour

After the end of the movement of probes, we consider their arrangement rather each other. If any point too strongly deviates, then we assume that it is a mistake, and the point is removed.

From the remained points we create a contour. At this stage the contour turns out broken, mainly in the field of blackout, and also eyes and eyebrows. For elimination of part of fluctuations about we approximate a contour:

```
CvContour contour;
        CvSeqBlock contour_block;
        cvMakeSeqHeaderForArray(CV_SEQ_POLYGON, sizeof(CvContour),sizeof(CvPoint),cvpoints, Contour_Points*2,
        (CvSeq*)&contour, &contour_block);
        CvSeq* seq = (CvSeq*)&contour;
        seq  = cvApproxPoly( seq , sizeof(CvContour), storage,CV_POLY_APPROX_DP, 5, 1 );
```

Figure 4 – Function of approximation of a contour.

As a result we will receive the contour describing the person. Using various algorithms, it is possible to work with allocation of separate elements, such as eyes, a nose and a mouth. For this purpose it is possible to use the above described algorithm, but on such objects as a nose and a mouth it can not give the expected result because of similar flowers.

Thus, during research of algorithm its following merits and demerits were revealed.

Advantages of this algorithm:

– simplicity in realization

– low computing complexity

– is a basis for other, more difficult algorithms demanding work with a face contour

Shortcomings:

– dependence on a background of the face and illumination

– simplicity of algorithm, is not present learning ability, as in Viola-Jones's algorithm or in neural networks.

– do not allow to classify object or to distinguish it but only to detect.

The problem of detection of persons is studied long ago by experts in the field of computer sight, and the results achieved in this direction are already very high. Using this approach of detecting of persons and allocation of their contours by method of probes, it is possible to create base for stronger and difficult algorithms, allowing to identify the personality of the person with high precision.

**2. The used technical means**

The following equipment rooms and software are necessary for work of the program on the computer of the user:

° C: Microsoft Windows 7.

COMPUTER type: AMD

Frequency of the processor is not lower than 1 GHz.

Random access memory of 1 GB.

Existence not less than 100 MB of an empty seat on a disk.

**3. Special conditions of application and requirement of organizational, technical and technological character**

Conditions of application have to conform to the modern requirements imposed to operation of the software. The program demands the installed VisualStudio 2013 package and can be started from any carrier.

**4. Conditions of transfer and sale of program documentation**

The program for the solution of a problem of optimization of restoration of technical system at regular control of serviceability of reserve elements and documentation to it can be transferred to the interested person or the organization on the basis of the contract with OMGTU and authors according to the current legislation.

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## ADVERTISING AND TECHNICAL DESCRIPTION "Remote training course "Mathematical logic and theory of algorithms. Part I" (the direction 09.03.03 - "Applied informatics", a profile - a magistracy)"

*FGBOOU WAUGH "The Ryazan state radio engineering university"*
*Prokaznikova E.N.*

***UDC** 378*
***GRNTI** 14.35.07, 27.03.00*

**1. Functional purpose, scope, its restrictions**

The structure and the maintenance of modern educational programs and standards are defined by formation of qualitatively new functions and types of professional activity connected with mass use of means of the information and communication technologies (CT) in educational activity.

Remote training course "Mathematical logic and theory of algorithms. Part 1" it is developed for systems internal and correspondence forms of education.

The maintenance of a course is focused on formation at students of theoretical knowledge and practical skills on discipline "Mathematical logic and the theory of algorithms", and also development of technologies of distance learning with a possibility of their practical realization in the program Moodle environment.

Figure 1 – Main page of a remote training course

The developed remote training course (figure 1) has modular structure. Each module (subject) represents the finished fragment with the didactic task (the control test and/or the examination) directed to formation at students of certain professional competences.

Application of competence-based approach allows to concretize the maintenance of modules of a remote course taking into account the main activities of the teacher in system of distance learning. Modules of a course contain the theoretical, practical and controlling materials directed to formation at students of the professional competences necessary for the organization and carrying out educational process with use of remote educational technologies.

Students are provided with a set of electronic educational and methodical and reference materials (lectures, practical works), detailed instructions and methodical recommendations. Detailed descriptions of lectures and practical tasks allow the student to get acquainted with the basic concepts of mathematical logic, to receive necessary skills and abilities according to the solution of tasks.

When developing this remote course the basic principle – the most complete and evident idea of a training material providing individual independent studying, and also creation of enough the internal and external relations allowing to organize effective and fast access for the trainee to necessary information was considered.

**2. Structure and conditions of application**

The remote training course "Mathematical logic and the theory of algorithms" consists of five main modules and has the following structure:

*1. Introduction module*
*2. History of development of mathematical logic*
*3. Basic concepts and definitions*
*4. Algebra of statements*
*5. Logic of predicates*
*6. Final module*
*7. Help module*

Information resources and interactive elements – lectures, practical tasks, tests are a part of modules.

In the first module (the introduction module) the information about the author and the studied discipline are supplied. Methodical instructions for students on studying of modules of a course are provided, the plan of studying of discipline is given. Also in this module the student has an opportunity to ask a question to the teacher.

The following four modules are the main substantial modules of the considered remote course. Each module contains material which it is necessary to study (lectures) and material of a practical orientation (tests and control tasks). Lecture represents PDF file. At the end of each module the student is offered to execute control testing (figure 2), and in Algebra of Statements and Logic of Predicates modules examination which it sends on check to the teacher.

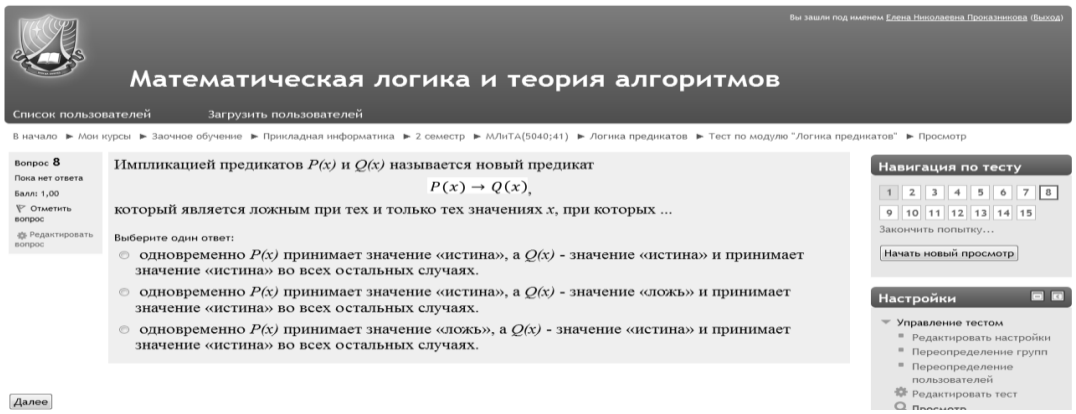



Figure 2 – Control testing in Moodle

The final module represents total testing on all studied material and the glossary for students.

The help module contains the list of references, a reference material on formulas of logic of statements and logic of predicates, the glossary at the rate.

As basic tools for development of a remote course freely extended software package of Moodle representing a learning management system in the electronic environment is used. This system was designed according to requirements of modern pedagogics and for level of the given opportunities bears comparison with the known commercial systems owing to what proved from a positive side in a number of foreign and Russian higher education institutions.

Educational and methodical materials of a remote course are presented in the form of files of various formats supported by Moodle (text and web pages, references to files (*.pdf, *.doc, *.jpg), catalogs, archives (*.zip), references to resources the Internet, etc.

Resources of a course can be studied directly on the computer, or to keep on the local computer for the press and further acquaintance. Interactive elements (lectures, tasks of various types, glossaries, tests) allow to focus attention of listeners on separate fragments of the studied material, to check the level of knowledge, to organize interaction of listeners with each other and with the teacher.

For work with a remote course it is recommended to use the Mozilla Firefox browser as when using other browsers correct work of the website of distance learning is not guaranteed.

Remote training course "Mathematical logic and theory of algorithms. Part 1" it is approved at evening (correspondence) faculty and on internal office of faculty of computer facilities of the Ryazan state radio engineering university.

**3. The used technical means**

Requirements to the personal computer of the user for work with a remote training course are presented in the table.

| | Office | |
|---|---|---|
| | At least | Optimum |
| Case (power supply unit) | Mini/Midi Tower of 350 W | Mini/Midi Tower of 350 W |
| Maternal payment (chipset) | AMD 740G + SB700 (CPU AMD), NVIDIA GeForce 8200 (CPU AMD) or Intel G41 + ICH7 (CPU Intel) | AMD 740G + SB710 (CPU AMD), NVIDIA GeForce 8200 (CPU AMD) or Intel G41 + ICH7 (CPU Intel) |
| CCP | AMD Athlon II X2 240 or Intel Pentium Dual-Core E2180 | AMD Athlon II X2 255 or Intel Pentium Dual-Core E5300 |
| RAM | 2 GB DDR2 800 (2□1 GB) | 2 GB DDR2 800 (2□1 GB) |
| Hard drive (HDD) | SATA 250 GB, 7200 rpm | SATA 500 GB, 7200 rpm |
| Network, audio- and graphic (video) of a payment | integrated | integrated |

Work with a remote course requires existence of connection of the computer of the user to the Internet and access to the server of system of distance learning of higher education institution on which this course is placed.

**4. Conditions of transfer and sale of program documentation**

Distribution and use of a remote training course "Mathematical logic and theory of algorithms. Part 1" can be carried out only with the consent of the author.

Reference to a course: Mathematical logic and theory of algorithms. Part I

The course can be transferred to the interested person or the organization on the basis of the contract according to the current legislation.

Concerning acquisition it is possible to address in FGBOU VPO "The Ryazan state radio engineering university".

Address: 390005, Ryazan, Gagarin St., 59/1

Phone: (4912) 46-04-37

E-mail: cdo@.rsreu.ru

## ADVERTISING AND TECHNICAL DESCRIPTION "Card of Fire of Motor-shooting Office"

*FGBOOU WAUGH "Omsk state technical university"*

*Pepelyaev A.V., SHmakov E.A., Valyn I.E., Tomilov A.A.*

***UDC 623.643***

***GRNTI 78.21.36, 78.27.49, 14.35.07***

**1. Functional purpose of the program, scope, its restrictions**

This work represents the training program "A card of fire of motor-shooting office"

Allows:

1. To acquaint students with drawing up a card of fire of motor-shooting office.
2. To study the tactical symbols applied in fighting documents.

The training program is developed with use of the Adobe Flash Professional CS5 program

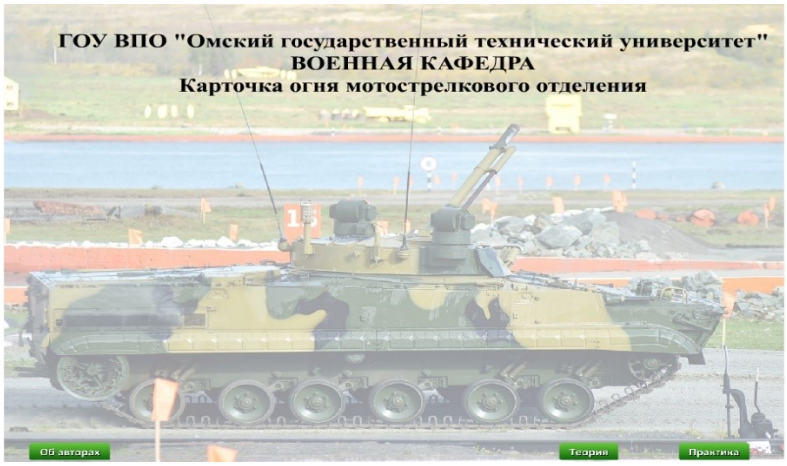



Figure 1.

In figure 1 the main page of the program is submitted.

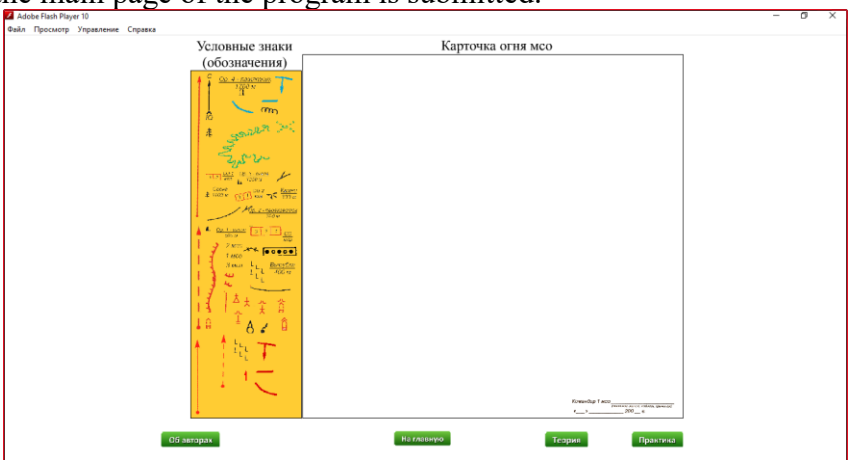



Figure 2.

In figure 2 the panel of creation of a card of fire of motor-shooting office is presented.

The training program consists of the following sections:

1. Theoretical information on tactical symbols
2. Information on the purpose of the program and authors
3. Practical part of registration of a card of fire of motor-shooting office

This training program can be used by the cadets of military educational institutions, students who are trained according to the program in training of reserve officers at military departments of higher educational institutions.

Restrictions of application of the program:

- start of the training program requires existence of the established Flash Player.

**2. The used technical means**

Adobe Flash CS5 Professional is one of the most powerful and popular programs which is intended for professional development interactive a flash rollers or interactive contents of web pages, and also for creation video fleshrolikov.

Has the Adobe Flash CS5 Professional appendix in the arsenal the wide functionality allowing just to create easily and interactive projects under different platforms therefore you will have no problems with demonstration of the creations before any public.

It should be noted what in this program of animation it is possible to do by means of only one click by a mouse. Thanks to object-oriented approach to animation creation which is realized in the Adobe Flash CS5 Professional program you will be able quickly and conveniently to make the animated flash movie of the picture.

And the new tools intended for editing the movement of objects allow to carry out much quicker and more simply work with projects as, for example, there is such convenient opportunity as automatic creation of a trajectory of the movement. And thanks to the editor of the movement, you will be able to set properties of animation at any objects.

**3. Special conditions of application and requirement of organizational, technical and technological character**

Use of this training program requires existence of the personal computer, not below Intel, to the RAM not less than 512 MB, Windows 95 or later versions. Viewing of this training program requires existence of the established Flash Player.

**4. Conditions of transfer and sale of program documentation**

The training program can be transferred to the interested person or the organization on the basis of the contract with OMGTU and authors according to the current legislation.

## ADVERTISING AND TECHNICAL DESCRIPTION "Educational and game Puzzles program

*FGBOOU WAUGH "Omsk state technical university"*
*Pepelyaev A.V., Varlakov P.M., Valyn I.E., Tomilov A.A., Krivorotova I.N.*

***UDC** 356/359 (470)*
***GRNTI** 78.21.14, 78.27.49*

**1. Functional purpose of the program, scope, its restrictions**

This work represents the educational and game Puzzles program

Allows:

To acquaint students with systems of functioning of the T-72 tank.

To consolidate by students the gained knowledge of structure and a structure of data of systems of the T-72 tank.

The educational and game program is developed with use of the Visual C# Express Edition program

Figure 1.

In figure 1 the main page of the program after loading of the picture is submitted.

The training program consists of the following items:

Loading of the picture

The option "Training" which shows the collected picture on a background

The option "Control" which disconnects the collected picture on a background for quality check of digestion of material

About the program, the including list of authors of the program and its purpose

This training program can be used by the cadets of military educational institutions, students who are trained according to the program in training of reserve officers at military departments of higher educational institutions.

**2. The used technical means**

Visual C# Express Edition is a free set for programming under OS of MS Windows family.

Visual Studio deservedly has success in developers and it is considered one of the best environments for programming in Windows. Express Edition represents the image of DVD including free environments for creation of programs on C ++, C#, VB and also web developments. Besides the main tools, compilers and debagger the program included unique functionality, for example support of SQL-like syntax of language of inquiries of LINQ. The Express Edition components are distributed for free and are focused on the beginning programmers and students. However it does not exclude creation by means of the free version of the high-quality software as the main opportunities of the commercial version are kept.

**3. Special conditions of application and requirement of organizational, technical and technological character**

Use of this training program requires existence of the personal computer, not below Intel, to the RAM not less than 512 MB, Windows 95 or later versions.

**4. Conditions of transfer and sale of program documentation**

The educational and game program can be transferred to the interested person or the organization on the basis of the contract with OMGTU and authors according to the current legislation.

## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic resource "Engineering Graphics"

*The Volga polytechnical institute (branch) of FGBOU IN "The Volgograd state technical university"*

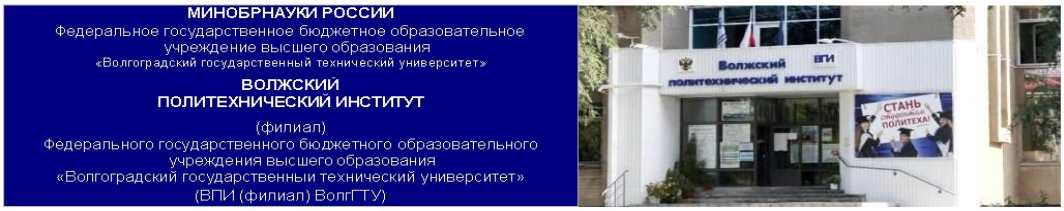
*Storchak N.A., Tyshkevich V.N., Sin'kov A.V.*

***UDC*** *378*

***GRNTI*** *14.35.07, 27.21.15, 81.14.11*

**1. Functional purpose of a product, area of its application, its appointment**

The electronic resource "Engineering Graphics" is an educational and methodical grant and contains electronic and text data (1 file: 14,4 MB).




Электронная библиотека студента О диске

Электронный ресурс

**Сторчак Н.А., Тышкевич В.Н., Синьков А.В.**

# Инженерная графика

**Волжский**

**2016**

Educational and methodical grant "The engineering graphics" contains electronic text, tabular and graphic information, is developed according to requirements of Federal state standard of the higher education and intended for students of all forms of education which are trained in the directions of a bachelor degree:

18.03.02 - Power - and resource-saving processes in chemical technologies, petrochemistry and biotechnology.

15.03.04 - Automation of technological processes and productions.

23.03.03 - Operation of transport technological machines and complexes.

15.03.05 - Design-technology providing machine-building productions.

27.03.01 - Standardization and metrology.

18.03.01 – Chemical technology.

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«Волгоградский государственный технический университет»
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(ВПИ (филиал) ВолгГТУ)

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УДК 514.18+744

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Канд. тех. наук, доцент кафедры ОТД Волжского института строительства и технологий (филиала) Федерального государственного бюджетного образовательного учреждения высшего образования «Волгоградский государственный архитектурно-строительный университет», Т.К. Барабанщикова

**О диске**

Издается по решению редакционно-издательского совета Волгоградского государственного технического университета

Все права на размножение и распространение в любой форме остаются за разработчиком.

Нелегальное копирование и использование данного продукта запрещено.

Сторчак, Н. А. **Инженерная графика** [Электронный ресурс]: учебно-методическое пособие / Н. А. Сторчак, В. Н. Тышкевич, А. В. Синьков // Электрон. текстовые дан. (1 файл: 14,4 МБ) – Волжский: ВПИ (филиал) ВолгГТУ, 2016 г. – Систем. требования: Windows 95 и выше; ПК с процессором 486+; CD-ROM. – свид. о регистрации №

В учебно-методическом пособии изложен теоретический материал по начерта-тельной геометрии с примерами решения задач и методическими указаниями, основы технического черчения с методическими указаниями для выполнения графических работ.
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Scope of this electronic resource - educational process at the Volga polytechnical institute (branch) of the Volgograd state technical university, object of training - students of the directions of a bachelor degree: 18.03.02, 15.03.04, 23.03.03, 15.03.05, 27.03.01, 18.03.01 all forms of education.

The electronic educational and methodical grant "Engineering graphics" is additional educational and methodical material on disciplines "Descriptive geometry and engineering graphics", "Engineering graphics", "Engineering and computer graphics".

In an electronic educational and methodical grant theoretical data, examples of the solution of tasks, necessary help data, methodical instructions to the solution of tasks, performance and registration of control and graphic works are given. The recommended literature is specified.

Purpose of an educational and methodical grant: to submit to the student necessary theoretical data, examples of the solution of tasks, methodical instructions to the solution of tasks and performance of control and graphic works on the main subjects of a course.

Relevance and novelty of an educational and methodical grant is that it is written taking into account long-term experience of teaching discipline in the Volga polytechnical institute for students of the specified directions of a bachelor degree.

**2. The used technical means**

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## ADVERTISING AND TECHNICAL DESCRIPTION "Short Course of Lectures on Discipline " the Organization of Scientific, Patent and Innovative Activity " (the Direction 18.04.01 — Chemical Technology, a Profile — a Magistracy)"

*Volga polytechnical institute (branch) of federal public budgetary educational institution of the higher education "Volgograd state technical university"*

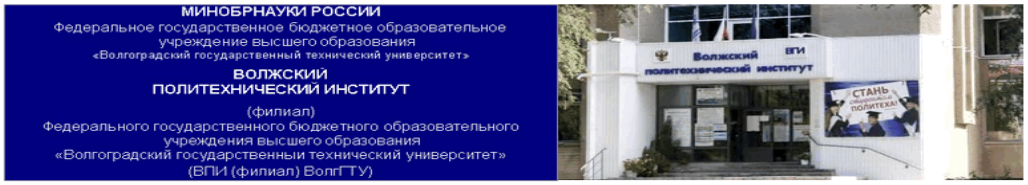
*Kablov V.F.. Kejbal N.A. . Krekaleva T.V.*

***UDC** 378*

***GRNTI** 14.35.07, 81.13.13*

**1. Functional purpose of a product, area of its application, its appointment**

The short course of lectures on discipline "The organization of scientific, patent and innovative activity" is the manual and contains the main questions of discipline given in the working program. (1 file: 480 CBs).




Электронная библиотека студента | О диске

**Электронный ресурс**

**Каблов В.Ф., Кейбал Н.А.**

# Краткий курс лекций по дисциплине «Организация научной, патентной и инновационной деятельности

**Волжский**

**2016**

The electronic manual is developed according to requirements of Federal state standard of the higher education and intended for the students of a magistracy who are trained in the Chemical Technology direction. A scope of this electronic resource is educational process at the Volga polytechnical institute (branch) of the Volgograd technical university, any students of the chemical directions can act as object of training. The electronic manual is recognized to provide interaction of the student with the training material offered by the teacher, allowing to work as independently, and in audience by means of the last.

The electronic resource "A short course of lectures on discipline "The organization of scientific, patent and innovative activity" is the main training material on discipline "The organization of scientific, patent and innovative activity".

In an electronic grant questions of the organization of scientific, patent and innovative activity are considered. The important place in the manual is taken by the section devoted to the organization of patent activity, including a technique of drawing up the application for the invention. Features of basic and applied scientific researches are given in certain heads, indicators of the importance of scientific works – a quoting, Hirsh's index are described.

Today basic and applied researches are two forms of implementation of science as the profession which is characterized by uniform system of training of specialists and the uniform massif of basic knowledge. Moreover, distinctions in the organization of knowledge in these types of research do not create basic obstacles for mutual intellectual enrichment of both research spheres.

Creation of the innovative enterprises is a perspective task when forming infrastructure of modern higher educational institutions now.

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канд. техн. наук, начальник отдела технического контроля ОАО «ЭКТОС-Волга» Л.В. Шпанцева.

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Кейбал, Н.А. **Краткий курс лекций по дисциплине «Организация научной, патентной и инновационной деятельности»**[Электронный ресурс]: учебное пособие /В.Ф. Каблов, Н.А. Кейбал, Т.В. Крекапева //Электрон. текстовые дан.(1 файл: 480 КБ) – Волжский: ВПИ (филиал) ВолгГТУ, 2016 г. – Систем. требования: Windows 95и выше; ПК с процессором486+;CD-ROM. – свид. о регистрации №

Рассмотрены вопросы организации научной, патентной и инновационной деятельности. Значительное место в учебном пособии занимает раздел посвященный организации патентной деятельности, включающий методику составления заявки на изобретение. В отдельных главах приведены особенности фундаментальных и прикладных научных исследований, описаны показатели значимости научных работ – цитируемость, индекс Хирша.
Предназначено для студентов, обучающихся по направлению 180401 – «Химическая технология».

**Ключевые слова**: научная деятельность, инновации, патентная деятельность

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Protection of the intellectual property got during performance of a research job can be a link between carrying out applied researches and further commercialization of the received results within creation of the small innovative enterprises on the basis of institutes. For this reason the questions connected with the organization of scientific, patent and innovative activity should be considered in a complex.

The real electronic grant aims - to give knowledge of bases of basic and applied scientific researches; legal protection of results of intellectual activity at various stages NIR, research and Development with the subsequent realization of innovative ideas.

The electronic resource "A short course of lectures on discipline "The organization of scientific, patent and innovative activity" helps students of chemical specialties with studying of structure of scientific researches, algorithms of patenting of results of intellectual activity, and also mechanisms of the organization of the small innovative enterprises on the basis of higher educational institutions with assistance of venture funds.

The electronic resource "A short course of lectures on discipline "The organization of scientific, patent and innovative activity" allows, using the gained knowledge, in practice competently to conduct scientific researches when passing research practice, carrying out scientific researches within preparation of the master thesis.

**2. The used technical means**

For creation of an electronic resource "The short course of lectures on discipline "The organization of scientific, patent and innovative activity" was used language of a hypertext marking of HTML. The resource does not demand additional installation.

The technical means used during creation of the electronic edition "A short course of lectures on discipline "The organization of scientific, patent and innovative activity" it is the computer with Windows XP OS, the software of MS Word and the visual HTML Reader HTML editor of version 2.5.

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## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic resource "The Asynchronous Electric Drive with Frequency Management" (direction: 15.03.04 "Automation of technological processes and productions", level - a bachelor degree)"

*Volga polytechnical institute (branch) of federal public budgetary educational institution of the higher education "Volgograd state technical university"*

*Burcev A.G.*

***UDC** 378*

***GRNTI** 14.35.07, 61.53.99, 66.39.17*

**1. Functional purpose of a product, area of its application, its appointment**

The electronic manual "The Asynchronous Electric Drive with Frequency Management" is developed according to requirements of Federal state standard of the higher education and intended for the students of a bachelor degree and magistracy who are trained in the "Automation of Technological Processes and Productions" direction.

Is the manual and contains electronically - text data (1 file: 868 CBs).

The electronic resource "The Asynchronous Electric Drive with Frequency Management" is the main training material on discipline "The automated electric drive". The electronic educational edition has to provide assimilation by students of the training material stated in a grant on discipline "The automated electric drive", allowing to work as independently, and in audience together with the teacher.

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УДК 62.83

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Доктор физико-математических наук, профессор И.Ю. Мирецкий

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Бурцев А.Г. **Асинхронный электропривод с частотным управлением**[Электронный ресурс]:учебное пособие / А.Г. Бурцев // Электрон. текстовые дан.(1файл: 868 КБ) – Волжский: ВПИ (филиал) ВолгГТУ, 2016. – Систем. требования: Windows 95 и выше; ПК с процессором 486+; CD-ROM.– свид. о регистрации №.

Рассмотрен курс лекций по системам частотного управления асинхронным электроприводом. В лекциях освещены вопросы теоретических основ частотного управления, технического устройства и функциональных возможностей частотных преобразователей, описаны последовательные интерфейсы передачи данных, даны понятия векторного управления, приведены сведения по устройству датчиков скорости вращения.
Предназначены для студентов бакалавриата, обучающихся по направлению: 15.03.04 «Автоматизация технологических процессов и производств».

**Ключевые слова:** образование в техническом вузе, учебные пособия, частотный преобразователь, электропривод, интерфейс, датчик.

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The lecture course of the theory and practice of application of frequency control of asynchronous engines is given in the electronic edition.

Asynchronous engines surpass other types of engines in reliability and low cost. The most qualitative way of a speed control of asynchronous engines is frequency regulation. In a grant besides theoretical bases of frequency management also questions of technical realization of electric drives with frequency converters are stated. Basics of vector management, the principles of operation of consecutive interfaces of data transmission and a design of sensors of speed are covered.

The real electronic grant aims - formation at students of necessary theoretical and practical knowledge of control and commissioning of the frequency and adjustable electric drive.

Electronic resource "The automated electric drive. The laboratory practical work" allows, using the gained knowledge in practice, to make our industry more effective and modern.

**2. The used technical means**

The electronic resource "The Asynchronous Electric Drive with Frequency Management" is created with use of language of a hypertext marking of HTML and does not demand additional installation.

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## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic resource "Calculations of Chemical and Technological Processes" (direction: 18.03.02 "Power - and resource-saving processes in chemical technology, petrochemistry and biotechnology", level - a bachelor degree)"

*Volga polytechnical institute (branch) of federal public budgetary educational institution of the higher education "Volgograd state technical university"*

*Butov G.M., Ivankina O.M.*

***UDC** 378*

***GRNTI** 14.35.07, 55.63.55, 61.47.29, 61.47.31*

**1. Functional purpose of a product, area of its application, its appointment**

The electronic manual "Calculations of Chemical and Technological Processes" of authors of Butovo of G. M., is intended to Ivankina O. M. for the students who are trained in the directions 18.03.01 "Chemical technology" and 18.03.02 "Power - resource-saving processes in chemical technology, petrochemistry and biotechnology".

Is the manual and contains electronically - text data (1 file: 544 CBs).

This grant is written according to the adopted program of the course "General Chemical Technology" and contains short theoretical material and the practical solution of tasks of the

sections of this course concerning calculations of chemical and technological processes. All sections are supplied with several examples and tasks for the independent decision.

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Профессор кафедры «Теплоэнергетика и теплотехника» филиала ФГБОУ ВО «Национальный исследовательский университет «МЭИ» в г. Волжском, к.х.н., с.н.с. Гончарова Л. К.

**О диске**

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Бутов Г.М., Иванкина О.М. **Расчеты химико-технологических процессов.** [Электронный ресурс]: учебное пособие/ Г.М. Бутов, О.М. Иванкина // Электрон. текстовые дан.(1 файл: 544 КБ) – Волжский: ВПИ (филиал) ВолгГТУ, 2016 г. – Систем. требования: Windows 95 и выше; ПК с процессором486+; CD-ROM.– свид о регистрации №.

Учебное пособие предназначено для студентов, обучающихся по направлениям «Химическая технология», «Энерго-, ресурсосберегающие процессы в химической тех-нологии, нефтехимии и биотехнологии». В нем приведены примеры расчета основных показателей химико-технологического процесса, принципы составления материальных и тепловых балансов, термодинамические и кинетические расчеты.

**Ключевые слова:** образование в техническом вузе, учебные пособия, химико-технологический процесс, технологические показатели химико-технологического процесса, материальный баланс химико-технологического процесса, энергетический баланс химико-технологического процесса, термодинамика химической реакции, кинетика химической реакции.

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The structure of this grant includes six sections reflecting all stages of calculations of chemical and technological processes.

In the first section concepts about the most important indicators of chemical and technological processes and account coefficients by which determine need for initial raw materials are given and estimate efficiency of chemical and technological process.

The second section is devoted to the stekhiometrichesky analysis of reactions and carrying out the material calculations based on the stekhiometrichesky analysis of difficult reactions.

In the third section an idea of drawing up theoretical and practical material balances on the set indicators, as is given of the most important development stage of chemical and technological process.

Theoretical material of the fourth section is devoted to the principles of drawing up thermal balances of elements of chemical and technological systems. In it examples of calculation of thermal streams and drawing up thermal balance which allows to define thermal load of the reactor are presented.

In the fifth section examples of the thermodynamic analysis, calculation of a constant of balance and equilibrium structure of reversible chemical reactions which allow to establish probability of course of reaction in this or that direction and to choose optimum conditions for receiving the maximum product yield are given.

The sixth section is devoted to calculations of kinetic and activation parameters and drawing up kinetic model for the set reaction.

The most part of the examples stated in a grant repeatedly was applied by authors when carrying out seminar occupations, and also when performing laboratory works, research works of students. Theoretical materials and examples of the solution of tasks can be used when performing term papers at the rate "General Chemical Technology" and final works of students.

## 2. The used technical means

The electronic resource "Calculations of Chemical and Technological Processes" of authors of Butovo of G. M., was created by Ivankina O. M. with use of language of a hypertext marking of HTML and does not demand additional installation.

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## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic resource "Chemical Kinetics" (direction: 18.02.03 "Power - and resource-saving processes in chemical technology, petrochemistry and biotechnology", level - a bachelor degree)"

*Volga polytechnical institute (branch) of federal public budgetary educational institution of the higher education "Volgograd state technical university"*

*Kuruninoj G.M.*

***UDC** 378*

***GRNTI** 14.35.07, 53.03.07, 53.03.09*

**1. Functional purpose of a product, area of its application, its appointment**

The electronic resource "Chemical Kinetics", the author Kurunina G. M. is the manual in the subject "Physical chemistry".

The manual "Chemical Kinetics" it is urged to give help to the students studying a subject physical chemistry: it will be prepared for a practical training, laboratory researches. In the manual the list of references, and also references to an electronic resource is given.

Is the manual and contains electronically - text data (1 file: 496 CBs).

The electronic resource "Chemical Kinetics" allows, using the gained knowledge in practice, to apply them subsequently on other studied objects, and also on production.

This electronic manual is developed for the students who are trained on day correspondence to forms of education in the direction of preparation 18.02.03 "Power - and resource-saving processes in chemical technology, petrochemistry and biotechnology". A preparation profile "Machines and devices of chemical productions" and the students who are trained on day and part-time courses 18.03.01 "Chemical technology" a preparation Profile "Technology of processing of polymers". This electronic grant is intended for application in educational process on discipline "Physical chemistry" when studying the section "Chemical

Kinetics". The electronic manual has to provide training of students for a laboratory and practical training as allows to work independently, studying theoretical material and to get acquainted with order of performance of laboratory work which the student should do on laboratory research. The electronic grant contains a theoretical course on "Kinetics of chemical reactions", catalysis questions are taken also up. The course of performance of laboratory works on the studied discipline is given in the electronic manual.

The real electronic grant is written for the purpose of formation at the bachelor of necessary knowledge of a subject, in it theoretical questions on formal kinetics are stated, formulas for calculation of a constant of speed for reactions of the first, second, third and n-go of orders are given, methods of definition of an order of reaction, besides, are presented theoretical bases of the theory of active collisions of S. Arrhenius, with the subsequent application of the gained knowledge in practice for answers to control questions or solutions of objectives. A main objective of the manual are: the help to students in studying of this material as the program of a laboratory course does not coincide with lecturing therefore students need to prepare for the report of laboratory works independently what they will be helped very well by this electronic resource with. The grant contains 12 sections in which the main aspects of the subject "Chemical Kinetics" are reflected, and also it contains three laboratory works with the description of their performance, calculation, the list of necessary reactants, and also control questions for examination of students on the subjects lit when studying laboratory work.

**2. The used technical means**

The electronic resource "Chemical Kinetics", the author Kurunina G. M. is created with use of language of a hypertext marking of HTML and does not demand excess installation.

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## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic resource "Electrochemical Methods of Protection against Corrosion" (direction: 18.03.02 "Power - and resource-saving processes in chemical technology, petrochemistry and biotechnology", level - a bachelor degree)"

*Volga polytechnical institute (branch) of federal public budgetary educational institution of the higher education "Volgograd state technical university"*

*Hlobzheva I.N., Krekaleva T.V., Kejbal N.A., Sokolova N.A., SHabanova V.P.*

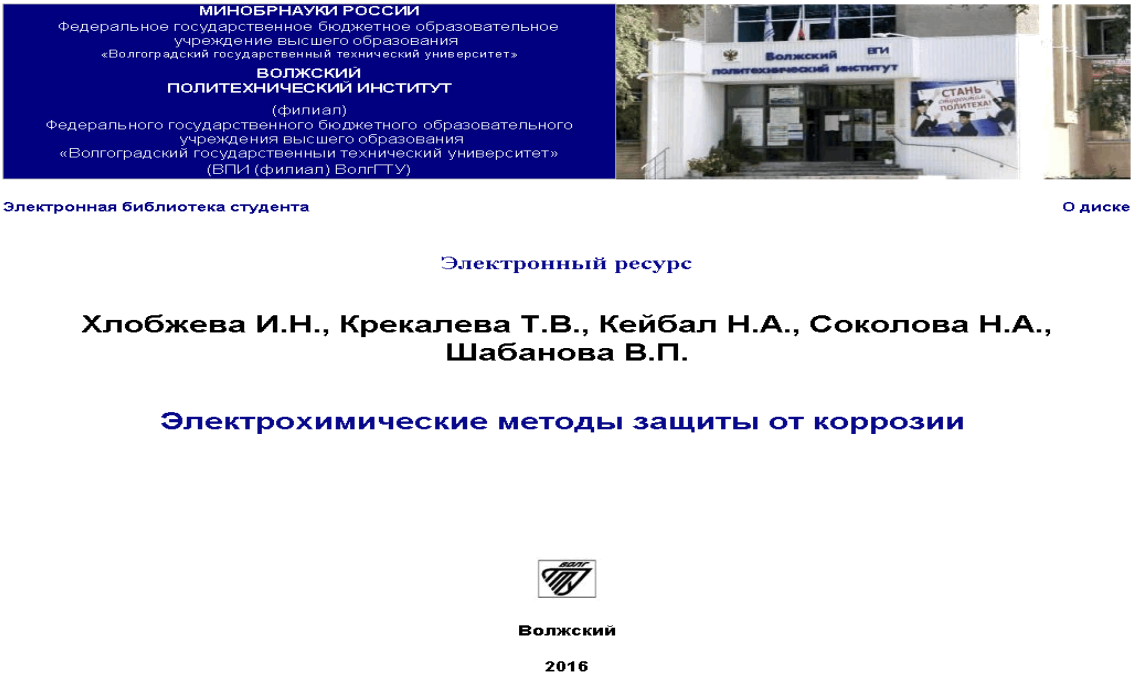
***UDC** 378*

***GRNTI** 14.35.07, 81.33.31, 81.33.29*

**1. Functional purpose of a product, area of its application, its appointment**

The electronic resource "Electrochemical Protection of Metals against Corrosion" is developed by a group of authors at VTPE, VPI department (branch) of VOLGGTU and is the manual. It contains electronic and text data which include: drawings, schemes, tabular material.

Is the manual and contains electronically - text data (1 file: 922 CBs).




This grant is developed on the basis of theoretical and practical researches in the field of anticorrosive protection of metal designs and products, and conforms to requirements of Federal state standard of higher education which is intended for the students who are trained in the direction 18.03.02 "Power - and resource-saving processes in chemical technology, petrochemistry and biotechnology"

МИНОБРНАУКИ РОССИИ
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УДК 620.197.5

Рецензенты:
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Канд. тех. наук, доцент кафедры ХПТЭ ВолгГТУ Петрюк И.В.

**О диске**

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Хлобжева И.Н., Крекалева Т.В., Кейбал Н.А., Соколова Н.А., Шабанова В.П. **Электрохимические методы защиты от коррозии** [Электронный ресурс]: учебное пособие / И.Н. Хлобжева, Т.В. Крекалева, Н.А. Кейбал, Н.А. Соколова, В.П. Шабанова // Электрон. текстовые дан.(1файл-992 КБ) – Волжский: ВПИ (филиал) ВолгГТУ, 2016 г. – Систем. требования: Win-dows 95 и выше; ПК с процессором486+; CD-ROM. – свид. о регистрации №.

В основу учебного пособия входит теоретический и иллюстрационный матери-ал, позволяющий изучить электрохимические методы защиты от коррозии. В пособии приведены основные электрохимические и коррозионные определения, закономерно-сти, необходимые для освоения проблемы защиты от коррозии металлических конст-рукций. Сущность всех электрохимических методов защиты заключается в смещении потенциала защищаемого металла в область значений, при которых его ионизация за-трудняется или вообще невозможна. Рассмотрены анодные, катодные механизмы защит-ного действия конструкционных материалов.
Пособие рассчитано на студентов дневной, вечерней и заочной формы обучаю-щихся по направлению 18.03.02 «Энерго- и ресурсосберегающие процессы в химиче-ской технологии, нефтехимии и биотехнологии» профиль – «Машины и аппараты хи-мических производств» (уровень бакалавриата).

**Ключевые слова:** образование в техническом вузе, учебные пособия, электрохимическая коррозия, методы защиты от коррозии, стационарный электродный потенциал, анодная и катодная защита конструкционных металлических материалов.

**Зарегистрирован** в ОФЕРНиО (Объединенный Фонд Электронных Ресурсов "Наука и Образование") (www.ofernio.ru)

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In the manual (M) *at the available level* the actual and scientifically based material given in line with fundamental knowledge *is stated. In it are considered and the main methods of electrochemical protection of metals against corrosion are analyzed.*

*The purpose given - to help unitary enterprise to students to study and master rational methods of anticorrosive protection and to acquire new knowledge in the field, and also to supply with the necessary information on modern aspects of use of anticorrosive technologies. The electronic grant is directed to creation of conditions for development of independence, an initiative of students and to control of knowledge on theoretical, laboratory and additional classes.*

*Unitary enterprise is relevance of development the fact that problems of application of anticorrosive protection are connected with huge economic and ecological losses from corrosion of metals. Therefore, it is necessary to pay special attention to the level of training of future expert providing works on anticorrosive protection.*

The main task of this electronic and educational resource - *to light one of the main sections of scientific discipline "Protection against corrosion" from the point of view of a technique of its teaching. The structure unitary enterprise to follow the working program and to open the subject containing in it. The electronic resource is added with the list the used scientific and educational literature.*

*The manual has to help students to successful studying and independent study on discipline "Protection against corrosion".*

**2. The used technical means**

The electronic resource "Electrochemical Protection of Metals against Corrosion" is created with use of language of a hypertext marking of HTML and does not demand additional installation.

The technical means used during creation of the electronic edition it is the computer with Windows XP OS, the software of MS Word and the visual HTMLReader HTML editor of version 2.5.

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Email: library@volpi.ru

## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic resource "German. Independent work of students in technical college" (the direction: 23.03.03 Operation of transport technological machines and complexes, level - a bachelor degree)"

*Volga polytechnical institute (branch) of federal public budgetary educational institution of the higher education "Volgograd state technical university"*

*Gvozdyuk V.N.*

***UDC** 378*

***GRNTI** 14.35.07, 16.21.31, 16.31.41*

**1. Functional purpose of a product, area of its application, its appointment**

Electronic resource "Manual" German. Independent work of students in technical college" N. V. Gvozdyuk. – Electron. text it is given. (1 file: 168 CBs) – Volzhsky: VPI (branch) of VOLGGTU, 2016." – Systems. requirements: Windows 95 above; The personal computer with the processor 486+; CD ROM.

The manual contains theoretical provisions on the most difficult subjects of grammar of German and a number of the various exercises promoting formation of grammatical skills and abilities at students. The available statement of material and logically constructed system of exercises allows to acquire and fix grammatical material on the studied subjects to students of both day, and correspondence offices.

The electronic manual is developed according to requirements of Federal state standard of higher education and intended for students of day, intramural and extramural, correspondence forms of education of all directions of preparation of a bachelor degree and magistracy studying discipline "Foreign language", "A business foreign language" in VPI (branch) of VOLGGTU.

The grant purpose – to submit the basic grammatical rules and designs of German which are most often found in technical literature in an available form and to create practical skills and abilities.

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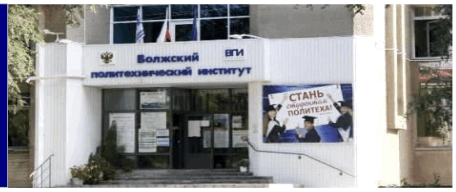


Электронная библиотека студента О диске

Электронный ресурс

**Гвоздюк В.Н.**

**Немецкий язык. Самостоятельная работа студентов в техническом вузе.**

**Волжский**

**2016**

The manual contains theoretical provisions on the most difficult subjects of grammar of German and a number of the various exercises promoting formation of grammatical skills and abilities at students. Grammatical material moves in the generalized and compact form in the form of theoretical rules, schemes and tables.

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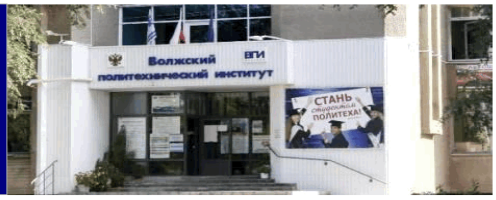


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УДК 802.0

Рецензенты:
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Ст. преподаватель кафедры «ЛиМК» РАНХиГС Марянина Л.А.

**О диске**

Издается по решению редакционно-издательского совета

Волгоградского государственного технического университета

Гвоздюк В.Н.**Немецкий язык. Самостоятельная работа студентов в техническом вузе**[Электронный ресурс]:учебное пособие /Н.В.Гвоздюк.– Электрон. текстовые дан.(1файл: 168 КБ) – Волжский: ВПИ (филиал) ВолгГТУ, 2016. – Систем. требования: Windows 95 и выше; ПК с процессором 486+; CD-ROM. – свид. о регистрации №

Данное учебное пособие предназначено для студентов дневной, очно-заочной, заочной форм обучения всех направлений подготовки бакалавриата и магистратуры, изучающих дисциплину «Иностранный язык» в ВПИ (филиал) ВолгГТУ

**Ключевые слова:** образование в техническом вузе, учебные пособия, самостоятельная работа, грамматические правила и конструкции немецкого языка.

**Зарегистрирован** в ОФЕРНиО (Объединенный Фонд Электронных Ресурсов "Наука и Образование") (www.ofernio.ru)

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The available statement of material and logically constructed system of exercises allows to acquire and fix grammatical material on the studied subjects to students of both day, and correspondence offices; help the solution of a communicative task when studying German.

The electronic manual can be used by students in the course of preparation as on occupations of a foreign language under the leadership of the teacher, and independently.

**2. The used technical means**

Electronic resource "Manual N. V. Gvozdyuk. – Electron. text it is given. (1 file: 168 CBs) – Volzhsky: VPI (branch) of VOLGGTU, 2016." it is created with use of language of a hypertext marking of HTML and does not demand additional installation.

The technical means used during creation of the electronic edition it is the computer with Windows XP OS, the software of MS Word and the visual HTMLReader HTML editor of version 2.5.

**3. Special conditions and requirements of organizational, technical and technological character**

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## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic Business planning resource (direction: 38.04.01 "Economy" for studying of discipline "Business planning", level - the master)"

*Volga polytechnical institute (branch) of federal public budgetary educational institution of the higher education "Volgograd state technical university"*

*Goncharova E.V., Medvedeva L.N.*

***UDC** 378*

***GRNTI** 14.35.07, 06.11.45, 06.35.01*

**1. Functional purpose of a product, area of its application, its appointment**

The manual "Business planning" represents the manual with electronic and text data.

This electronic resource is developed according to requirements of FGOS IN and is intended for the masters who are trained in the Economy direction 38.04.01. Is the manual and contains electronically - text data (1 file: 708 CBs).

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Электронная библиотека студента | О диске

Электронный ресурс

**Гончарова Е. В., Медведева Л.Н.**

**Бизнес-планирование**

**Волжский**

**2016**

Electronic grant it is planned to apply to educational process at the Volga polytechnical institute (branch) of the Volgograd technical university, object of training – masters of internal and correspondence forms of education. The electronic manual is a resource of interaction of the master with discipline material on a lecture and practical training and out-of-class studying.

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УДК 338.984

Рецензенты:
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Доктор экономических наук, профессор. Кострюков В. А.

**О диске**

Издается по решению редакционно-издательского совета Волгоградского государственного технического университета

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Гончарова Е. В., Медведева Л.Н. **Бизнес-планирование**[Электронный ресурс]:учебное пособие / Е. В. Гончарова, Л. Н. Медведева // Электрон. текстовые дан.(1 файл - 708 КБ) – Волжский: ВПИ (филиал) ВолгГТУ, 2016 г. – Систем. требования: Windows 95 и выше; ПК с процессором 486+;CD-ROM. – свид. о регистрации №.

В учебном пособии рассмотрены принципы и методы планирования, приведена основная классификация планов. В пособии представлена общая структура бизнес-плана с подробной характеристикой основных разделов. Рассмотрен процесс составления бизнес-плана на конкретных примерах. Приведены вопросы для обсуждения на практических занятиях. Пособие рассчитано на магистров всех форм обучения направления 38.04.01 «Экономика» для изучения дисциплины «Бизнес-планирование».

**Ключевые слова:** образование в техническом вузе, учебные пособия, бизнес-план предприятия, структура бизнес-плана, методы планирования, виды планов, формы и варианты планирования.

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The electronic Business planning resource is the main training material on discipline "Business planning".

In an electronic grant types, methods and the principles of planning of business processes are considered. The contents of the main sections of the business plan of the enterprise are

submitted. The practical examples of business plans of the organizations which are substantially characterizing process of business planning for fuller assimilation by masters of the considered material are given.

The contents of the manual reflect the main cases in point of a course on discipline "Business planning". The manual corresponds to the training program of discipline and the maintenance of the main competences developed in the course of studying. From the practical point of view significantly that authors pay special attention to questions of effective development of business plans of activity of the modern enterprise for justification and development of administrative decisions.

The main sections of a grant reflect methodology and the principles of business planning as process and its roles in activity of the enterprise. The special attention is paid to questions of structure of the business plan and techniques of its drawing up.

Distinctive feature of the manual is consideration of methodology of drawing up business plans in relation to production systems and management process. The practical importance of work consists in justification of the importance of business planning as means of increase of production efficiency and functioning of economic system.

The purpose of this electronic grant – formation at masters of necessary knowledge in the field of the economic planning, the basic principles and methods of business planning actual for today's Russian economic reality, with the subsequent application of the gained knowledge in practice. The main objectives of the manual are: the help to masters in studying of the main subjects of a course for preparation for a lecture and practical training on discipline "Business planning".

The electronic Business planning resource helps masters with studying of features of drawing up the business plan of the enterprises for improvement of a business and production activity.

The electronic Business planning resource allows, using the gained knowledge in practice, to increase efficiency of planning of activity of business, the Russian industry and economy in general taking into account modern operating conditions of the enterprises in the market.

**2. The used technical means**

Systems. requirements: Windows 95 above; The personal computer with the processor 486+; CD ROM. – it is twisted. about registration No., the visual HTMLReader HTML editor of version 2.5.

**3. Special conditions and requirements of organizational, technical and technological character**

Treats necessary conditions of use of the electronic edition - existence of the personal computer with the processor 486+, Windows 95 OS above with the software Web Browser (Firefox, Opera, IE, etc.), CD ROM. The browser of PDF of documents is necessary for viewing of electronic resources.

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# ADVERTISING AND TECHNICAL DESCRIPTION "Manual" insurance on the motor transport. Questions CMTPL" (direction: 23.03.03 Operation of transport technological machines and complexes, level - a bachelor degree)"

*Volga polytechnical institute (branch) of federal public budgetary educational institution of the higher education "Volgograd state technical university"*

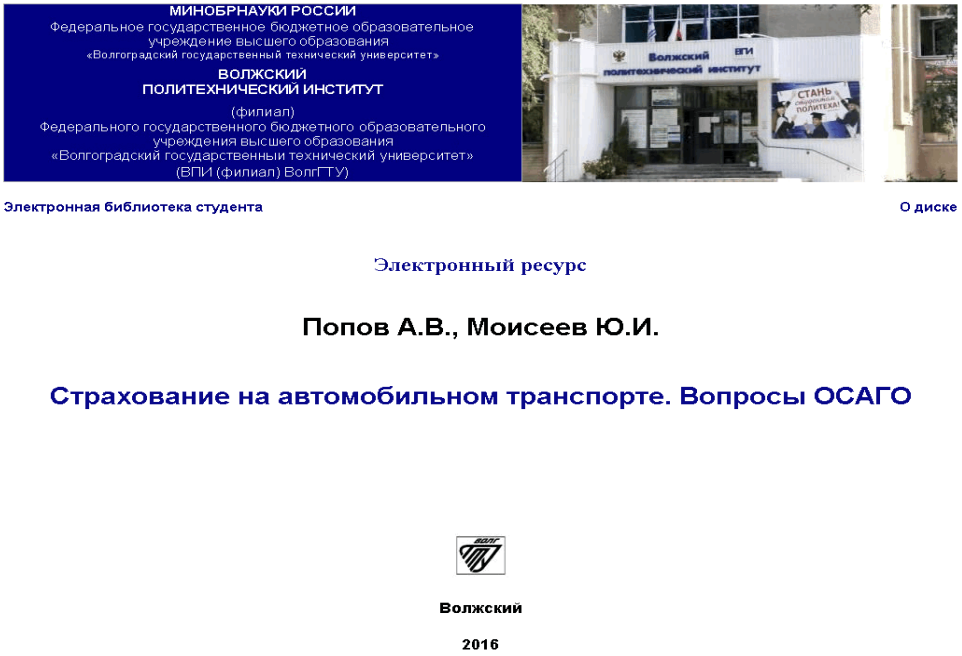
*Popov A.V., Moiseev YU.I.*

***UDC** 656.1*

***GRNTI** 45.53.37, 72.23.35*

**1. Functional purpose of a product, area of its application, its appointment**

Electronic resource "Insurance on the motor transport. Questions CMTPL" is the manual and contains electronic and text data (1 file: 688 CBs).




The electronic manual is developed according to requirements of Federal state standard of the higher education and intended for the students of a bachelor degree who are trained in the direction 23.03.03 Operation of transport technological machines and complexes. A scope of this electronic resource is educational process at the Volga polytechnical institute (branch) of the Volgograd technical university, students of any directions connected with the motor transport can act as object of training. The electronic manual is urged to provide interaction of the student with the training material offered by the teacher, allowing to work as independently, and in audience by means of the last.

Electronic resource "Insurance on the motor transport. Questions CMTPL" "Transport law" is a training material on discipline.

In the manual the main questions connected with essence of insurance, regulation of insurance activity in the Russian Federation, the conclusion of the contract of obligatory insurance of a civil liability of owners of vehicles, payment of an insurance premium, violations of the rights of insurers and many others are considered.

The purpose of the manual is the statement of the main theoretical and practical questions of obligatory insurance of a civil liability of owners of vehicles, acquaintance with which will allow students and other readers to acquire necessary knowledge in the field. By preparation of the manual materials from personal experience of the author, educational and legal literature, the newest normative documents of the Russian Federation in the field of obligatory insurance of a

civil liability of owners of vehicles are used. At the end of each chapter control questions are given.

Obligatory insurance of a motor vehicle liability allows to solve effectively problems of indemnification by the victim, despite all organizational problems, imperfection of legislative regulation of obligatory insurance and serious shortcomings of work of insurance companies.

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Электронная библиотека студента  На главную

УДК 656.138

Рецензенты:
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подполковник полиции
Гончаревич Д.В.

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Попов, А.В. **Страхование на автомобильном транспорте. Вопросы ОСАГО**[Электронный ресурс]:учебное пособие / А.В. Попов, Ю.И. Моисеев // Электрон. текстовые дан.(1 файл: 688 КБ) – Волжский: ВПИ (филиал) ВолгГТУ, 2016 г. – Систем. требования: Windows 95 и выше; ПК с процессором486+ ;CD-ROM. – свид. о регистрации №

Содержит сведения о вопросах обязательного страхования гражданской ответственности владельцев транспортных средств.
Изложены основные вопросы, связанные с ОСАГО. 23.03.03 «Эксплуатация транспортно-технологических машин и комплексов», профиль «Автомобили и автомобильное хозяйство».

**Ключевые слова:** образование в техническом вузе, учебные пособия, страхование, страховщик, страховая премия, страховая выплата.

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Such factors as growth of automobilization, intensity of traffic, increase in quantity of road accidents, accidents and number of victims, drawing a big loss to national economy in general, demonstrate that in Russia the CMTPL will take more and more important place among other branches of insurance.

Electronic resource "Insurance on the motor transport. Questions CMTPL" helps students with studying of theoretical bases of modern insurance.

**2. The used technical means**

Electronic resource "Insurance on the motor transport. Questions CMTPL" it is created with use of language of a hypertext marking of HTML and does not demand additional installation.

The technical means used during creation of the electronic edition it is the computer with Windows XP OS, the software of MS Word and the visual HTMLReader HTML editor of version 2.5.

**3. Special conditions and requirements of organizational, technical and technological character**

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## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic resource "Digital Systems of Automation and Management" (direction: 15.03.04 "Automation of technological processes", level - a bachelor degree)"

*Volga polytechnical institute (branch) of federal public budgetary educational institution of the higher education "Volgograd state technical university"*

*Kaplya V.I., Burcev A.G. . Silaev A.V.*

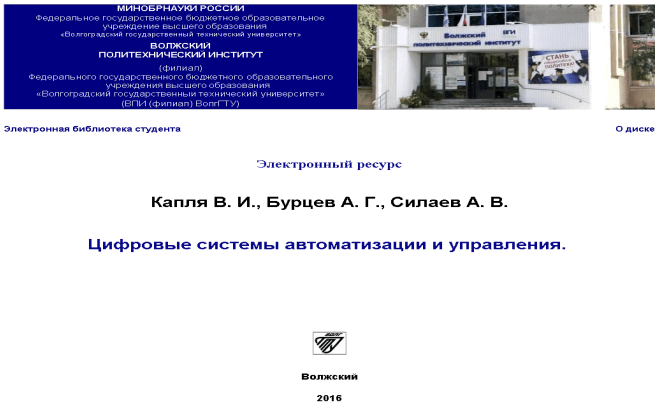
***UDC** 378*

***GRNTI** 14.35.07, 20.53.25, 28.15.15*

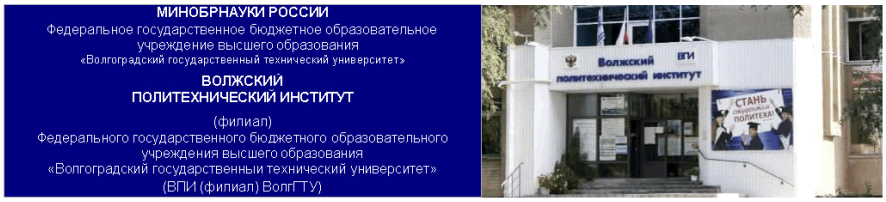
**1. Functional purpose of a product, area of its application, its appointment**

The electronic resource "Digital Systems of Automation and Management" is the manual for studying of questions on discipline "Digital systems of automation and management" (TsSAU), is developed according to requirements of Federal state standard of higher education for the direction 15.03.04 "Automation of technological processes and productions"

Is the manual and contains electronically - text data (1 file: 1,39 MB).




The manual contain information necessary for training of students in the field of the scientific researches and practical introduction of systems of automation and management using the principles of digital information processing. The manual contains 3 sections: models of digital systems; hardware of TsSAU, software of TsSAU. Contents of these sections correspond to a discipline course "Digital systems of automation and management".

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УДК 681.32

Рецензенты:
Канд. тех. наук, доцент кафедры «Автоматизация технологических процессов и производств» филиала ГОУВПО «Московский энергетический институт (технический университет)» в г. Волжском И.А.Болдырев
Доктор тех. наук, профессор. кафедры «Прикладная математика и информатика» Волжского гуманитарного института (филиала) ВолГУ И.Ю. Мирецкий

**О диске**

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Капля В. И., Бурцев А. Г., Силаев А. В. **Цифровые системы автоматизации и управления.** [Электронный ресурс]: учебное пособие / В.И. Капля, А.Г. Бурцев, А.А. Силаев//Электрон. текстовые дан.(1 файл: 1,39 МБ). – Волжский: ВПИ (филиал) ВолгГТУ, 2016.– Систем. требования: Windows 95 и выше; ПК с процессором 486+; CD-ROM.– свид. о регистрации № .

В пособии рассмотрены основные структуры и методы цифровых систем автоматизации и управления. Пособие ориентировано на студентов и специалистов, занимающихся решением вопросов разработки цифровых систем управления.

**Ключевые слова:** образование в техническом вузе, учебные пособия, контроллер, цифровые датчики, интерфейс, таймеры, дисплей.

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Novelty of the manual consists in system of the knowledge and skills acquired by students in the course of studying of TsSAU equipped with the modern high-speed programmable controller and digital peripheral devices: displays, sensors, means of a wireless communication. As a practical example in the manual the modern high-performance STM32F103 controller which has educational and debugging versions, one of which is given in the photo, is considered.

Relevance of the manual is predetermined by transition from analog systems of automation to digital control systems at modernization or creation of new productions and productions. The questions considered in a grant are typical problems of the modern digital automated systems.

Priority of the manual is directed to maintenance and development of the mathematical and program and algorithmic technologies capable to provide realization of difficult intellectual systems of automatic control of modern industrial complexes on production of the knowledge-intensive production.

The main objectives solved by the manual:

Studying of mathematical models of the description of TsSAU.

Studying of hardware of TsSAU.

Studying of the built-in peripheral devices of a microprocessor control system.

Studying of digital interfaces for connection of external peripheral devices of a microprocessor control system.

Development of the basic principles of development of the functional software of programmable controllers.

The manual contain theoretical, technical, and reference information for support of carrying out laboratory works and performance of semestrial (control) work on discipline "Digital systems of automation and management".

**2. The used technical means**

The electronic resource "Digital Systems of Automation and Management" was created with use of language of a hypertext marking of HTML and does not demand additional installation. The technical means used during creation of the electronic edition it is the computer with Windows XP OS, the software of MS Word and the visual HTMLReader HTML editor of version 2.5.

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## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic resource "Of the mechanic (physical bases). Physics. Part I" (direction: 15.03.05 "Design-technology ensuring machine-building productions" both 27.03.01 "Standardization and metrology", level - a bachelor degree)"

*Volga polytechnical institute (branch) of federal public budgetary educational institution of the higher education "Volgograd state technical university"*

*Kumysh M.M., Surkaev A.L.*

***UDC** 378*

***GRNTI** 14.35.07, 29.03.25, 29.03.25*

**1. Functional purpose of a product, area of its application, its appointment**

Manual "Mechanics (physical bases). Physics. Part I" it is intended for students of the higher educational institutions which are trained in the directions (specialties) 15.03.05 "Design-technology ensuring machine-building productions" both 27.03.01 "Standardization and metrology" and also other technical directions of training of bachelors. The grant contains the necessary theoretical material and examples illustrating the basic concepts of the section "Mechanics" of the course "General Physics" and the methodical complex of discipline (UKMD) with placement in electronic library of HIGHER EDUCATION INSTITUTION is intended for inclusion in Uchebno. Is the manual and contains electronically text data (1 file: 1,20 Mb).

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Электронный ресурс

Кумыш М.М., Суркаев А.Л.

**Механика (физические основы). Физика. Часть 1**

Волжский

2016

Novelty of development is that the section "Mechanics" from a course of the General physics is stated in lectures in that sequence and in that volume which most close approach the directions of further training within the chosen specialties (see the previous paragraph).

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УДК 53 (075.5)

Рецензенты:
Зав. кафедрой «Общая физика» филиала ФГБОУ ВО «Национальный исследовательский университет (МЭИ)» в г. Волжском, док. физ.-мат. наук, профессор, В. Г. Кульков.
Профессор кафедры «Прикладная математика и информатика» Волжского гуманитарного института (филиал) ФГБОУ ВО «Волгоградский государственный университет», док. тех. наук, профессор, И. Ю. Мирецкий.

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Кумыш М.М., Суркаев А.Л. **Механика (физические основы). Физика. Часть 1.** [Электронный ресурс]:учебное пособие / М. М. Кумыш, А. Л. Суркаев// Электрон. текстовые дан. ( 1 файл: 1,2 МБ ) – Волжский: ВПИ (филиал) ВолгГТУ, 2016 г. Систем. Требования: Windows 95 и выше; ПК с процессором 486 +; CD-ROM – свид. о регистрации №.

Учебное пособие содержит необходимый теоретический материал и примеры, иллюстрирующие основные понятия раздела «Механика» курса «Общая физика». Предназначено для студентов высших учебных заведений, обучающихся по направлению (специальности) 15.03.05 «Конструкторско-технологическое обеспечение машиностроительных производств» и 27.03.01 «Стандартизация и метрология», а также других технических специальностей.

**Ключевые слова:** образование в техническом вузе, учебные пособия, механика, кинематика, динамика, поступательное движение, вращательное движение, материальная точка, частица, масса, сила, импульс, момент импульса, момент силы, момент инерции, энергия, законы сохранения, релятивистская механика, специальная теория относительности, преобразования Лоренца.

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Relevance of development. Now the new structure of FGOS VPO (so-called, the 3rd generation) takes root according to which the higher education has to develop common cultural and professional competences at students. This grant satisfies to the arisen new requirements and therefore is timely.

Structure and volume of a grant. The grant is executed in the form of a course of lectures which cover subjects of working programs of discipline "Physics" in volume of those hours

which are intended for bachelors according to the section "Mechanics". Each of eight lectures represents somewhat a complete subject with clarification of physical sense of the studied phenomena, concepts and laws. On the other hand, all course of lectures is logically connected by the uniform concept. In spite of the fact that authors sought to reduce whenever possible the volume of the given course, nevertheless, authors made the decision to include in the first (introduction) lecture mathematics elements (vectors, derivatives, the operator of a nabl), to move ahead further, and not to wait when it is aware of the mathematics studied by students, the corresponding material is considered.

The volume of a grant makes 139 pages of the text, including the 56th drawing, 1 table. The bibliography includes 3 names.

The purpose of the real development is in coming to the modern level of teaching physics with application of the new technological capabilities connected with a computerization of training and application of audio and video of media means. Within this development it is provided both display of demonstration experiences, and the presentation of the available material which is saved up and is available in an arsenal of authors, and also in staff of department of applied physics and mathematics (VPFM) of the Volga Polytechnical Institute (VPI).

Scope. This grant can be included in the UKMD electronic resources for the purpose of further use by teachers by preparation of the courses of lectures, when carrying out a seminar and practical training according to the section "Mechanics" and students during the studying and preparation for seminar occupations and a laboratory practical work. The scope can be expanded by inclusion of additional material without any change of structure of a grant.

Summary of development. This course of lectures on physical bases of mechanics was given by authors for several years. The saved-up experience after the deep analysis allowed authors to construct the course of lectures combining both the standard technique of teaching, and author's innovations. At selection of material for a grant the directions and specialties of the student's contingent specializing in the field of the mechanical engineering which is trained according to the program of a course of the general physics were considered. The general approach, proximity of a statement and mutually supplementing picked-up material allowed authors to harmonize the practices in a uniform lecture course. This course included subjects according to appropriate programs, at the same time authors carefully selected material, but not to the detriment of clarity of a statement.

**2. The used technical means**

The real electronic resource is created with use of language of a hypertext marking of HTML and does not demand additional installation.

The technical means used during creation of the electronic edition it is the computer with Windows XP OS, the software of MS Word and the visual HTMLReader HTML editor of version 2.5.

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## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic resource "of the Physicist. Part IV. Magnetism" (direction: 09.03.01 "Informatics and computing", 15.03.04 "Automation of technological processes", level - a bachelor degree)"

*Volga polytechnical institute (branch) of federal public budgetary educational institution of the higher education "Volgograd state technical university"*

*Zubovich S.O., Surkaev A.L., Kul'kov V.G., Suhova T.A., Kumysh M.M., Rahmankulova G.A.*

***UDC** 378*
***GRNTI** 14.35.07, 27.35.29, 27.35.34*

**1. Functional purpose of a product, area of its application, its appointment**

Manual "Physics. Part IV. Magnetism" it is written according to the federal state educational standard of the higher education.

The purpose of writing of this grant is, first of all, creation of a uniform source of information when studying this section of physics by students of all directions of training of technical college.

Is the manual and contains electronically - text data (1 file: 704 CBs).

Authors were faced by a number of tasks: to examine works of other authors on this subject, to reveal the most significant and important points when studying this course, to structure all material in logical sequence for the easiest perception of information the reader.

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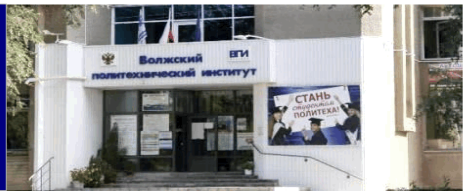


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УДК 537(075.8)

Рецензенты:
Рецензенты: Профессор кафедры «Физика твердого тела» ФГБОУ ВО «Воронежский государственный технический университет» д.ф.-м.н, профессор, Л.Н. Коротков
Доцент кафедры «Общая физика» филиала ФГБОУ ВО «Национальный исследовательский университет (МЭИ)» в г. Волжском д.ф.-м.н, Ю.В. Васильева.

**О диске**

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Зубович С.О., Суркаев А.Л., Кульков В.Г., Сухова Т.А., Кумыш М.М., Рахманкулова Г.А. **Физика. Часть IV. Магнетизм.** [Электронный ресурс]: учебное пособие/ Зубович С. О. [ и др.] // Электрон. текстовые дан.(1 файл: 704 КБ) – Волжский: ВПИ (филиал) ВолгГТУ, 2016 г. – Систем. требования: Windows 95и выше; ПК с процессором 486+; CD–ROM.– свид. о регистрации №.

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Пособие может быть полезно для студентов всех специальностей.

**Ключевые слова:** образование в техническом вузе, учебные пособия, магнетизм, магнитное поле, закон Ампера, закон Лоренца, закон Био-Савара-Лапласа, токи проводимости, токи смещения, электромагнитная индукция, закон Фарадея, законы Максвелла, электромагнитные колебания, электромагнитные волны, ферромагнетизм.

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The section "Magnetism" is one of parts of the whole course "Electrodynamics". Importance of separate studying of this section is caused by a big variety of the magnetic phenomena surrounding the simple inhabitant in everyday life. Manual volume such is that even the most difficult things can be understood, having studied this grant. The emphasis of authors on the most important subjects of the section "Magnetism" allows to understand an essence of all other laws and the phenomena of electromagnetism. The grant can be used both teachers when carrying out lecture occupations, and students for independent preparation.

The grant consists of two heads "Magnetism" and "Electromagnetic oscillations and waves".

Summary. Any electric current creates around itself a magnetic field. This field carries out power interaction between two conductors with current, between two permanent magnets and between the conductor with current and magnets. Like electric field the magnetic field is material object and transfers interaction with a final speed. A permanent magnet attribute two poles - northern and southern. The poles of the same name make a start, and heteronymic - are attracted.

Respectively, the magnetic field can be represented by power lines which are called the lines of induction having the direction. Lines of induction leave the North Pole of a magnet (N) and enter southern (S). But, unlike electric power lines, lines of magnetic induction do not come to an end on poles, and represent the closed lines.

The field unlike substance is a special form of matter. The invariable magnetic field in time is studied by magnetistatics, changing – magnetodynamics.

The basic law in magnetistatics is Biot-Savart-Laplace's law allowing to calculate the induction created by an element of the conductor in the point removed on some vector from an element on which current flows. Let's note that forces of magnetic interaction are not central. They are always directed perpendicular to lines of magnetic induction and conductors with

currents and significantly depend on their orientation. The direction of vectors can be found by the rule of the left hand.

For calculation of power interaction of conductors with current or permanent magnets it is used Ampere's law, or its variation for the field of a single moving charge – Lorentz's law. As a rule, the solution of practical tasks demands simultaneous application of all specified laws.

For the quantitative and qualitative description of a magnetic field the power characteristic - intensity is entered. Intensity - the vector size determined by the Ampere force operating from a field source (moving charges) on other source of the field (other moving charges) placed in this field.

The magnetic field can exist in all substances which are in any conditions, such substances are called magnetics. This ability of matter is caused by its structure since all bodies consist of the atoms which are superstrong micromagnetics. A field source in substance, from positions of the theory of electromagnetism, are the electrons moving on the orbits around atomic nuclei. Their speed is big, and dimensions of atoms are small therefore, for example, in atom of hydrogen there is a magnetic field with a force more than 13 T whereas the strongest neodymium permanent magnets create the field 10 times weaker. However, the magnetic field in substance is capable both to strengthen, and to weaken the external field therefore magnetics are divided into three groups: the diamagnetics which are slightly weakening an external magnetic field; the paramagnetics which are slightly strengthening an external magnetic field; ferromagnetics – considerably strengthening an external magnetic field at the expense of the ordered domain structure.

For the description of a power component of a magnetic field, the concept of the inductance as sizes which is an inertia measure at electromagnetic processes is entered. Energy of a magnetic field also is defined by inductance.

Basic laws for the magnetic field changing in time, are the law of electromagnetic induction of Faraday – does not exist separately electric or magnetic water, but there is a uniform electromagnetic field; its mathematical treatment in the form of concept of current of shift, entered by J. Maxwell – alternating current extends both in substance and in space in the form of electromagnetic waves which in a number of tasks are convenient for presenting in the form of vortex electromagnetic fields; and system Maxwell's equation. And electromagnetic waves from positions of the theory of electromagnetism – this variation electromagnetic field extending in space.

The equations of J of Maxwell for the electromagnetic field represent the generalized system of the differential equations describing any condition of the electromagnetic field. All listed above laws of a magnetic field and also all not listed laws of electric field rather simply can be output from initial system. Thus, Maxwell's equations for electromagnetism play the same role as Newton's equations for mechanics.

At the end of the edition the main constants and reference materials, and also bibliographic sources are given.

**2. The used technical means**

Electronic resource "Physics. Part IV. Magnetism" is created with use of language of a hypertext marking of HTML and does not demand additional installation.

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## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic resource "Introduction to Chemical Technology of Polymers" (direction: 18.03.01 the Chemical technology "Technology and Processing of Polymers", level - a bachelor degree)"

*Volga polytechnical institute (branch) of federal public budgetary educational institution of the higher education "Volgograd state technical university"*

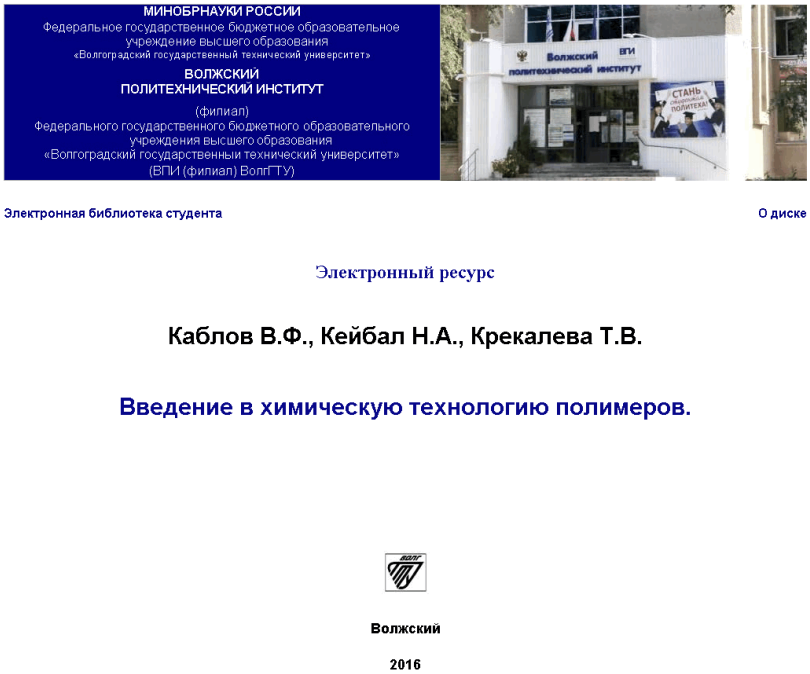
*Kablov V.F., Kejbal N.A., Krekaleva T.V.*

***UDC** 378*

***GRNTI** 14.35.07, 61.59.29, 29.17.31*

**1. Functional purpose of a product, area of its application, its appointment**

The electronic resource "Introduction to Chemical Technology of Polymers" is the manual for students of all forms of education of the direction and contains electronic and text data (1 file: 1,22 Mb).




The electronic manual is developed according to requirements of Federal state standard of the higher education and intended for the students of a bachelor degree who are trained in the Chemical Technology direction. A scope of this electronic resource is educational process at the Volga polytechnical institute (branch) of the Volgograd technical university, any students of the chemical directions can act as object of training. The electronic manual is recognized to provide

interaction of the student with the training material offered by the teacher, allowing to work as independently, and in audience by means of the last.

The electronic resource "Introduction to Chemical Technology of Polymers" is the main training material on discipline "Introduction to chemical technology of polymers".

In an electronic grant the questions of receiving various groups of polymers including information on raw materials, the production technology, properties and scopes are considered. The mechanisms of reactions of receiving polymers including the detailed description of participation in them of catalytic complexes are given.

In a grant features of technological process of production of polymers are in detail described, technological schemes and their description are provided.

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УДК 678.7

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**О диске**

Издается по решению редакционно-издательского совета
Волгоградского государственного технического университета

Каблов В.Ф., Кейбал Н.А., Крекалева Т.В. **Введение в химическую технологию полимеров.** [Электронный ресурс]:учебное пособие /В.Ф. Каблов, Н.А. Кейбал, Т.В. Крекалева // Электрон. текстовые дан.(1 файл:1,22 МБ) – Волжский: ВПИ (филиал) ВолгГТУ, 2016 г. – Систем. требования: Windows 95и выше; ПК с процессором486+,CD-ROM. Свид. о регистрации №

Данное учебное пособие предназначено для студентов дневной, очно-заочной, заочной форм обучения всех направлений подготовки бакалавриата и магистратуры, изучающих дисциплину 180301 – «Химическая технология» в ВПИ (филиал) ВолгГТУ

**Ключевые слова:** образование в техническом вузе, учебные пособия, полимеры, производство, свойства, технология.

**Зарегистрирован** в ОФЕРНиО (Объединенный Фонд Электронных Ресурсов "Наука и Образование") (www.ofernio.ru)

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The real electronic grant aims - studying of methods of receiving and synthesis of polymers, features of their structure.

The electronic resource "Introduction to Chemical Technology of Polymers" helps students of chemical specialties with studying the main of mechanisms of course of the reactions of polymerization and polycondensation which are the main in chemical technology of polymers.

The electronic resource "Introduction to Chemical Technology of Polymers" allows, using the gained knowledge, in practice competently to carry out an assessment of features of technological process of receiving polymers, when passing production and externship, and also preparation of final qualification work of the bachelor.

**2. The used technical means**

The real electronic resource is created with use of language of a hypertext marking of HTML and does not demand additional installation.

The technical means used during creation of the electronic edition it is the computer with Windows XP OS, the software of MS Word and the visual HTMLReader HTML editor of version 2.5.

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## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic resource "Workshop on Algorithmization of the Solution of Tasks"

*Volga polytechnical institute (branch) of federal public budgetary educational institution of the higher education "Volgograd state technical university"*

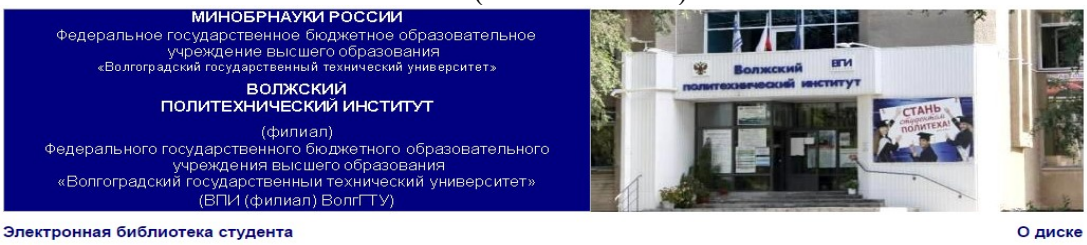
*Lyasin D.N. . Fadeeva M.V.*

***UDC** 378*

***GRNTI** 14.35.07, 50.05.13, 50.05.17*

**1. Functional purpose of a product, area of its application, its appointment**

The electronic resource "Workshop on Algorithmization of the Solution of Tasks" is the manual and contains electronic and text data (1 file: 952 CBs).




Электронный ресурс

**Лясин Д.Н., Фадеева М.В.**

**Практикум по алгоритмизации решения задач. Основы программирования на языках Си и Си++**

Волжский

2016

The electronic manual is developed according to requirements of Federal state standard of higher education and intended for the students of a bachelor degree who are trained in the direction "Program Engineering", "Informatics and Computer Facilities", "Automation of

Technological Processes and Productions". A scope of this electronic resource is educational process at the Volga polytechnical institute (branch) of the Volgograd technical university, any students of above-mentioned directions can act as object of training. The electronic manual is urged to provide interaction of the student with a training material which is offered by the teacher, and allows to use them during the work as independently, and in audience.

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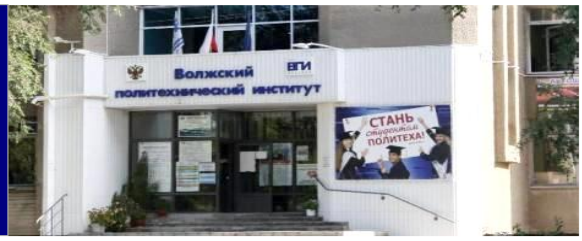


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УДК 004.056

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Доцент кафедры «Автоматика, электроника и вычислительная техника» Волжского политехнического института (филиал) ФГБОУ ВПО «Волгоградский государственный технический университет», к. т. н. Силаев А.А.

**О диске**

Издается по решению редакционно-издательского совета Волгоградского государственного технического университета

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Лясин, Д.Н., **Практикум по алгоритмизации решения задач. Основы программирования на языках Си и Си++** [Электронный ресурс]: учебное пособие / Д.Н. Лясин, О.Ф. Абрамова // Электрон. текстовые дан.(1 файл: 952 КБ) – Волжский: ВПИ (филиал) ВолгГТУ, 2016 г. – Систем. требования: Windows XP и выше; ПК с процессором Celeron и выше; CD-ROM. – свид. о регистрации №

Содержит решение типовых задач для освоения основ алгоритмического мышления и создания программ на языках Си и Си++. Решение каждой задачи содержит анализ вариантов решения, алгоритмизацию решения с представлением алгоритма в виде псевдокода и блок-схемы, трассировку хода выполнения ал-горитма на заданных входных данных, код программной реализации решения на языках Си и для некоторых задач на Си++.
Практикум охватывает широкий класс задач от простых разветвляющихся алгоритмов к циклическим, алгоритмам обработки данных в массивах, строках, динамических списках, алгоритмам работы с файловыми потоками. Практикум призван закрепить на практике знания, полученные в теоретическом курсе освоения основ программирования на языках Си и Си++.
Предназначено для студентов, обучающихся по направлениям подготовки бакалавров 230100.62 «Информатика и вычислительная техника» и 231000.62 «Программная инженерия», и рекомендуется для изучения дисциплины «Основы программирования».

**Ключевые слова:** образование в техническом вузе, учебные пособия, алгоритмы, блок-схема, листинг программы, ветвление, циклы, операторы, массивы

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The electronic resource "Workshop on algorithmization of the solution of tasks" is an auxiliary training material on discipline of "An algorithmization basis" and "Programming and bases of algorithmization".

Recommendations about performance and registration of practical and laboratory works on discipline of "An algorithmization basis" contain this manual. In it stage-by-stage creation of programs in the Xi language is considered. The grant covers the following subjects: branching, cycles, one-dimensional and two-dimensional massifs, lines. In each subject which is contained it is aware of studying of discipline of "An algorithmization basis", several tasks are described. The solution of each task is in detail submitted. Enters the solution of each task:

Example of calculations: the example of entrance data and result which has to be received as a result of work of the program is given;

Reasonings on the basis of which the algorithm of the solution of a task on a pseudo-code is created are given;

Trace of this algorithm at various introduction data is presented;

On the basis of the created algorithm the flowchart of this task is under construction;

Listing of the program in the Xi language is given;

In case of a possibility of modification of this algorithm, the modified version of creation of the program realizing this task is submitted.

Educational and methodical the grant is developed for improvement of the organization laboratory – a practical training and provides an order of their carrying out, unification of records, increase of intensity of work of students due to reduction of expenses of time for preparation and registration of results of the analysis, and also ensuring control by the teacher.

The present manual helps with formation of practical knowledge in the field of design of algorithms, creation of programs in language of high level, imparts the general culture of programming.

**2. The used technical means**

The electronic resource "Workshop on Algorithmization of the Solution of Tasks" was created with use of language of a hypertext marking of HTML and does not demand additional installation.

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## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic resource "The Equipment and Production Safety at the Enterprises of Rubber Industry"

*Volga polytechnical institute (branch) of federal public budgetary educational institution of the higher education "Volgograd state technical university"*

*SHabanova V.P., Kablov V.F., Hlobzheva I.N., Krekaleva T.V.*

***UDC** 378*

***GRNTI** 14.35.07, 55.09.39, 61.57.01*

**1. Functional purpose of a product, area of its application, its appointment**

The electronic resource "The Equipment and Production Safety at the Enterprises of Rubber Industry" is the manual and contains electronic and text data (1 file: 2.33 MB).

The electronic manual is developed according to requirements of Federal state standard of higher education and intended for the students of a bachelor degree who are trained in the Chemical Technology direction a profile - Technology and processing" and students of a magistracy in the Chemical Technology direction with preparation for research activities for the Technology of Processing of Elastomers program, the Scope of this electronic resource is educational process at the Volga polytechnical institute (branch) of the Volgograd technical university, any students of the specified directions can act as object of training.

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**О диске**

Издается по решению редакционно-издательского совета Волгоградского государственного технического университета

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Шабанова, В.П. **Оборудование и производственная безопасность на предприятиях резиновой промышленности** [Электронный ресурс]: учебное пособие / В.П. Шабанова, В.Ф. Каблов, И.Н. Хлобжева, Т.В. Крекалева // Электрон. текстовые дан. (1 файл: 2,33 МБ) – Волжский: ВПИ (филиал) ВолгГТУ, 2016 г. – Систем. требования: Windows 95 и выше; ПК с процессором 486+; CD-ROM. – свид. о регистрации №

Содержит сведения об оборудовании, применяемом в производстве отдельных видов резиновых изделий.
Изложены основы технологии основных процессов резиновой промышленности. Приведены примеры расчета производительности основного оборудования.
Рассмотрены вопросы производственной безопасности для отдельных производств резинотехнических изделий.
Пособие рассчитано на студентов дневной и вечерней формы обучения направления 18.03.01 – «Химическая технология» профиль - Технология и переработка, изучающих дисциплину «Основы проектирования установок пред-приятий отрасли» и студентов дневной формы обучения направления 18.04.01 "Химическая технология" с подготовкой к научно-исследовательской деятельности по программе "Технология переработки эластомеров", изучающих дисциплину «Оборудование производств по переработке полимеров».

**Ключевые слова:** образование в техническом вузе, учебные пособия, машины, аппараты, оборудование, технология, резиновые смеси, вулканизация, производственная безопасность

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The electronic resource "The Equipment and Production Safety at the Enterprises of Rubber Industry" is the main training material on disciplines "Bases of design of installations of the enterprises of branch", "The equipment of productions on processing of polymers".

In the presented manual the equipment applied in production of separate types of rubber products is considered.

Distinctive feature of production of RTI is extremely wide range (about 100 thousand names) - conveyor tapes, driving belts, hoses, and sleeves, sealing details of cars and fittings, couplings, shock-absorbers, etc. For performance of processes use a large number of various special cars, devices, difficult mechanisms and devices. In a grant questions of production safety at RTI plants are considered.

The real electronic grant aims - formation at the bachelor of necessary knowledge concerning the equipment and production safety at RTI plants, acquaintance with which will help their uses with practical activities, disclosure of contents of basic terms and concepts, with the subsequent application of the gained knowledge in practice. The main objectives of the manual are: the help to students in studying of the equipment of RTI plants and production safety at these plants.

The electronic resource "the Equipment and production safety at the enterprises of rubber industry" allows, using the gained knowledge in practice, to make domestic plants more effective and competitive.

The manual contains the necessary list of the recommended literature according to which perhaps more detailed acquaintance on this material. Material is stated correctly, in an available form. The data provided in a grant are borrowed from modern sources.

**2. The used technical means**

The electronic resource "The Equipment and Production Safety at the Enterprises of Rubber Industry" was created with use of language of a hypertext marking of HTML and does not demand additional installation.

The technical means used during creation of the electronic edition it is the computer with Windows XP OS, the software of MS Word and the visual HTMLReader HTML editor of version 2.5.

**3. Special conditions and requirements of organizational, technical and technological character**

Treats necessary conditions of use of the electronic edition - existence of the personal computer with the processor 486+, Windows 95 OS above with the software Web Browser (Firefox, Opera, IE, etc.), CD ROM. The browser of PDF of documents is necessary for viewing of electronic resources.

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Phone: 8 (8443) 254679

Email: library@volpi.ru

**ADVERTISING AND TECHNICAL DESCRIPTION "Electronic resource "Laboratory workshop on discipline of "A basis of welding production" (directions: 15.03.05 "Design-technology ensuring machine-building productions", 18.03.02 "Power – and resource-saving processes in chemical technology, petrochemistry and biotechnology"; level - a bachelor degree)"**

*Volga polytechnical institute (branch) of federal public budgetary educational institution of the higher education "Volgograd state technical university"*

*Tarasova T.S.*

***UDC** 378*

***GRNTI** 14.35.07, 81.35.21, 81.35.19*

**1. Functional purpose of a product, area of its application, its appointment**

The electronic resource "A laboratory workshop on discipline of "A basis of welding production" is the manual and contains electronic and text data (1 file: 1.74 MB).

МИНОБРНАУКИ РОССИИ
Федеральное государственное бюджетное образовательное учреждение высшего образования
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Электронный ресурс

**Тарасова Т.С.**

# Лабораторный практикум по дисциплине "Основы сварочного производства"

Волжский

2016

The laboratory workshop on bases of welding production is intended for carrying out laboratory works on discipline of "A basis of welding production".

Theoretical and practical material according to the main sections of welding taking into account a versatility of the required knowledge is reflected in the manual.

In the manual the integrated approach for studying of discipline of "A basis of welding production" is offered.

МИНОБРНАУКИ РОССИИ
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Электронная библиотека студента На главную

УДК 621.791.12

Рецензенты:
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Начальник службы информационных технологий ФБУ «Администрация «Волго-Дон» Тарасов В.В.

**О диске**

Издается по решению редакционно-издательского совета Волгоградского государственного технического университета

Все права на размножение и распространение в любой форме остаются за разработчиком.

Нелегальное копирование и использование данного продукта запрещено.

Тарасова, Т.С. **Лабораторный практикум по дисциплине "Основы сварочного производства"** [Электронный ресурс]: учебное пособие / Т.С. Тарасова // Электрон. текстовые дан. (1 файл: 1.74 МБ) - Волжский, ВПИ (филиал) ВолгГТУ, 2016. - Систем. требования: Windows 95 и выше; ПК с процессором 486+; CD-ROM. - номер свид. о регистрации

Содержит сведения о выполнении лабораторных работ и методах выбора и расчета режимов сварки необходимых для разработки технологических процессов и выполнения сварочных работ.
Изложены основы технологии ручной дуговой сварки, полуавтоматической сварки в среде углекислого газа, полуавтоматической сварки под флюсом, стыковой контактной сварки, роликовой (шовной) контактной сварки. Рассматривается конструкция точечной машины МТР-1701 и исследование на ней технологического процесса точечной сварки, расчет режимов точечной сварки и нормы времени при выполнении сварочных работ. Приведены методики выполнения работ и расчета режимов сварки.
Пособие рассчитано на студентов обучения по направлениям: 15.03.05 «Конструкторско-технологическое обеспечение машиностроительных производств» и 18.03.02 «Энерго– и ресурсосберегающие процессы в химической технологии, нефтехимии и биотехнологии» всех форм обучения.

**Ключевые слова:** образование в техническом вузе, учебные пособия, сварка, дуга электрическая, точечная сварка, дуговая сварка под флюсом дуговая сварка в углекислом газе, точечная сварка, шовная сварка, сварка стыковая, контактнаясварка, электрод.

**Зарегистрирован** в ОФЕРНиО (Объединенный Фонд Электронных Ресурсов "Наука и Образование") (www.ofernio.ru)

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Bases of technology of manual arc welding, semi-automatic welding in the environment of carbon dioxide, semi-automatic welding under gumboil, butt contact welding, roller (sutural) contact welding are stated. The design of the dot car and research on it technological process of spot welding, calculation of the modes of spot welding and norm of time when performing welding works is considered.

Techniques of performance of work and calculation of the modes of welding are given.

Laboratory works promote deeper digestion of theoretical material, acquisition of skills of the independent solution of engineering and research tasks.

At the choice of laboratory works by that, first of all, the preference is given to calculation and purpose of the modes of welding, and also studying of the principles of work and the device of the welding equipment, the choice of material, the sizes and forms of electrodes.

The data on the equipment, devices, electrodes entered in a grant and sequence of determination of parameters of the modes of welding which are followed by the indication of necessary formulas and tables will allow students to execute independently necessary calculations of the modes for the welded metals of various thickness and ways of welding.

The purpose of preparation of the manual "A laboratory workshop on discipline of "A basis of welding production" - to provide to students material in an available form according to the most important sections of the theory of welding in uniform educational structure.

In a grant the device and the principle of work of standard and perspective designs of cars for contact welding, the equipment of management, feature of mechanization and automation of contact welding are described.

The welding metallurgy differs from other metallurgical processes in high temperatures of a thermal cycle and small time of existence of a welding bathtub in a liquid state, i.e. in the state available to metallurgical processing of metal of a welded seam.

Besides, the processes of crystallization of a welding bathtub beginning from alloyage border, and formation of the metal of a zone of thermal influence changed on the properties that requires consideration of the characteristic of a welded seam and the solution of problems of quality of welded connection are specific.

For receiving high-quality butt connection it is necessary to heat preparations to the set temperatures, to provide a possibility of identical plastic deformation of both preparations, to prevent or reduce to a minimum oxidation of metal at end faces in the course of heating, to provide conditions for free removal of oxides from a joint. These requirements are realized by a right choice or calculation of the modes of welding and the welding equipment.

Providing standard requirements for technology and technology of welding - the main condition of receiving qualitative welded seams and welded products.

**2. The used technical means**

The electronic resource "the Laboratory workshop on discipline of "A basis of welding production" was created with use of language of a hypertext marking of HTML and does not demand additional installation.

The technical means used during creation of the electronic edition it is the computer with Windows XP OS, the software of MS Word and the visual HTMLReader HTML editor of version 2.5.

**3. Special conditions and requirements of organizational, technical and technological character**

Treats necessary conditions of use of the electronic edition - existence of the personal computer with the processor 486+, Windows 95 OS above with the software Web Browser (Firefox, Opera, IE, etc.), CD ROM. The browser of PDF of documents is necessary for viewing of electronic resources.

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## ADVERTISING AND TECHNICAL DESCRIPTION "A multimedia educational and methodical complex for distance learning on discipline of "A basis of the social state and civil society"

*Federal public budgetary educational institution of the higher education "Omsk state technical university"*

*Molchanova A.V.*

***UDC*** *378, 811.11*

***GRNTI*** *14.35.07, 03.01.07, 03.23.31, 03.23.25, 03.23.55*

**1. Functional purpose of the program, scope, its restrictions**

Purpose of the multimedia educational and methodical complex (EMC) on discipline of "A basis of the social state and civil society": independent use by students as educational and methodical materials at distance learning for theoretical preparation and self-examination. Multimedia UMK is suitable for maintenance of all types of educational activity at full-time courses.

During creation of a multimedia educational and methodical complex for distance learning on discipline of "A basis of the social state and civil society" author's materials in the form of test blocks were used. The resources which are available in free access on the Internet were in addition used.

1. Training materials have:

– the accurate modular structure coordinated with the working program of discipline;

– complexity (include theoretical, practical, control materials);

– completeness of a statement;

– high extent of visualization.

Training materials display the modern level and scientific achievements in the respective sphere.

UMK "Bases of the Social State" contains 8 multimedia slide lectures.

2. Multimedia slide lectures:

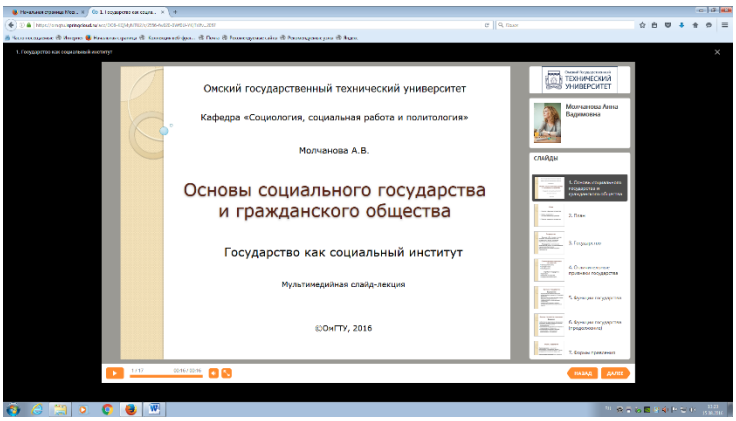



Fig. 1. An example of slide lecture in system in iSpring Suite

2.1. The multimedia slide lecture "State as Social Institute" - 26,7 MB.

2.2. The multimedia slide lecture "Origin of Ideas of the Social State and Civil Society" - 57,4 MB.

2.3. The multimedia slide lecture "Theories of the Social State and Civil Society of 16-19 Centuries." - 23,4 MB.

2.4. The multimedia slide lecture "Modern Scientific Approaches to Understanding of the Social State and Civil Society" - 18 MB.

2.5. The multimedia slide lecture "Essence of the Social State" - 109 MB.

2.6. The multimedia slide lecture "Main Characteristics and Assessment of a Condition of the Social State" - 25,3 MB.

2.7. The multimedia slide lecture "Concept of Civil Society" - 29,9 MB.

2.8. The multimedia slide lecture "Political Participation" - 31,2 MB.

Total: 806 MB.

EUMK is approved in Omsk the state technical university on the direction of extramural studies "social work".

As technical means for creation of components of multimedia UMK on discipline "History" software products were used: Power Point, iSpring Suite. The main advantages of these tools is ease and speed of the created materials.

**2. The used technical means**

2.1. The following equipment rooms and software are necessary for development of a multimedia educational and methodical complex for distance learning on discipline of "A basis of the social state":

1. Computer and AMD Phenom (tm) II processor.
2. Random access memory – 4096 MB.
3. Summary space on the hard drive of 1024 MB.
4. Color SVGA monitor of the computer resolution 1024x768 and above.
5. Operating system: Windows 7.
6. iSpring Suite 7.

2.2. The following equipment rooms and software are necessary for functioning of a multimedia educational and methodical complex for distance learning on discipline of "A basis of the social state and civil society" of the user:

When viewing on the computer:

Computer and Intel/AMD processor of 1 GHz or above.

Random access memory – 1024 MV.

Free space on the hard drive of 1024 MB.

Color SVGA monitor of the computer resolution 1024x768 and above.

Operating system: Windows XP/Vista/7/8, Macintosh, Linux.

Software: Internet Explorer 6 above, Mozilla Firefox 3.x above, Safari 3 above, Google Chrome, Opera 9.5 above, Adobe Flash Player 10.1 or above.

For viewing on mobile devices:

Mobile devices with resolution 480x320 and above.

Operating system: Mobile: Android 3.x or higher, iPad, iPad2, The New iPad (iOS 5.x or higher), Windows Phone 7.5 or higher, Windows RT.

The software for mobile devices. Desktop: Internet Explorer 9 or higher, Safari 5 or higher, Mozilla Firefox 12 or higher, Opera 11.6 or higher, Google Chrome 18 or higher.

**3. Special conditions of application and requirement of organizational, technical and technological character**

Application of an educational and methodical complex for distance learning on discipline of "A basis of the social state and civil society" is possible in the conditions of a modern educational computer class, and also on mobile devices of pupils at network placement of a complex with access on the Internet.

**4. Conditions of transfer and sale of program documentation**

The multimedia educational and methodical complex for distance learning on discipline of "A basis of the social state and civil society" and documentation to it can be given to the interested person or the organization on the basis of the contract with OMGTU and authors according to the current legislation.

## ADVERTISING AND TECHNICAL DESCRIPTION "Multimedia course "Of a problem of business in network economy: Global economic crisis"

*FGBOOU WAUGH "Omsk state technical university"*
*Kaluzhskij M.L.*

***UDC** 378, 811.11*
***GRNTI** 14.35.07, 03.01.07, 03.23.31, 03.23.25, 03.23.55*

**2. Functional purpose of the program, scope, its restrictions**

Multimedia course "Business problems in network economy: A global economic crisis" represent interpretation of one of sections of a course of network economy for masters in higher education institution. The course contains sections: reasons of industrial migration, stages of

industrial migration and results of industrial migration. Are created in the form of the presentation in the Prezi program with use of the standard Adobe Air program.

In a complete look the multimedia course contains 254 files in 119 folders which occupy 129 MB. The course contains 58 sounded slides. Theoretical material contains historic facts, definitions, the basic concepts, laws, schedules, drawings and charts. The multimedia course can be used for independent work on day and remote forms of education.

The multimedia course is intended for visualization of the lecture courses unveiling institutional features of the current global economic crisis.

The global economic crisis shaking world economy since 2008 is at the same time structural and cyclic.

Structural crisis is because the structure of world economy does not conform to requirements of the consumer market. Commodity production do not correspond to the falling demand, the prices – do not correspond to the decreasing purchasing power, and advance methods – do not correspond to real needs of buyers.

Cyclic crisis is because to replace traditional methods and technologies of business essentially new come. For their full development former leaders of the market need to refuse practically all saved-up potential (production, personnel, marketing) and to literally start everything from scratch.

Reasons of a global economic crisis:

***1st reason***: Exhaustion of resources of industrial development.

Any economic development happens or due to development of the new markets (extensively), or due to introduction of new technologies (intensively). The new markets allow to increase sales regardless of end of a consumer cycle of the goods sold earlier. In the traditional market sales volumes are defined by natural reproduction of demand, and in the new markets the gain of sales is proportional to a market share of trade offers.

New technologies allow to delay buyers at competitors and to stimulate a consumer demand. It is not really effective option as the lion's share of profit on development of innovative products leaves on start of a trade cycle (updating of productions, advertizing, etc.). Introduction of new technologies is the major condition existence of the huge sales market, due to repeated growth of sales compensating all costs of introduction of innovations. Some economists claim that in the former Soviet Union such market has to cover not less than 300 million population that not option too...

***2nd reason***: Collapse of the market of IT technologies. The global economic crisis began not with a collapse of the banking market of the USA in 2008, and much earlier – on March 10, 2000 with a collapse of capitalization of IT sector which became history under the name "crisis of dotcoms". This day the index of the American market of the hi-tech companies NASDAQ reached a historical maximum – a mark of 5132,52 percentage points, having doubled indicators of the previous year. In two last months nothing portended trouble, and raising of an index made even 1000 points. Then there was a sharp and forward falling. By the end 2002 the NASDAQ index reached a bottom – 1100 percentage points. The most part of the American IT companies were ruined, and falling of market value of the IT companies by October, 2002 made 5 trillion US dollars.

***3rd reason***: Industrial migration. Mass migration of industrial productions of 1990-2008 from the countries of "gold one billion" to the countries of Southeast Asia (first of all – in the People's Republic of China) not only cardinally changed a global picture of world economy, but turned out to be a natural consequence of the changes described above. This phenomenon had several bases:

Basis 1. Artificial stimulation of a global consumer demand. The U.S. Federal Reserve generated cheap credit resources (at the rate of 0,25%) which through a banking system of the USA were redistributed worldwide, including the Russian Federation. Credited all participants of chains of merchandising: from producers to end users.

Reason 2. Inflation of a bubble in global stock markets. Delay of growth of industrial production made it unattractive object of investment. Payback of investments in industrial production is quite low, and payback periods are rather big. On the other hand, oversaturation money of the American economy demanded development of new forms of investment.

Real profitability of industrial production already very few people interested – investments rushed on stock market. Industrial production with high salaries and costs in such conditions became a burden of owners who looked for ways of an exit from an impasse. An exit was found: if it is not possible to increase sales and to raise the prices, then it is necessary to lower costs.

However in any crisis situation there is an exit connected with transition to a new round of cyclic development. Changes begin at the level of certain participants of the market. In the falling market the internal sources of growth based on the technologies allowing to gain economic effect of reduction of costs dominate.

In a subsoil of traditional economy already arose and promptly other economy opening the new horizons and opportunities for all participants of the market develops. She demands new approaches, new methods of management and new understanding of a situation.

**2. The used technical means**

The following equipment rooms and software are necessary for work of a multimedia course on the computer of the user:

11. OS: Microsoft Windows HR or above.
12. COMPUTER type: IBM PC-sovmest. Personal computer.
13. Frequency of the processor is not lower than 1 GHz.
14. Random access memory of 512 MB.
15. Existence not less than 200 MB of an empty seat on a disk.

Characteristics of the software product:

1. Tool ON: MS PREZI
2. Program volume: 129MB

**3. Special conditions of application and requirement of organizational, technical and technological character**

Conditions of application have to conform to the modern requirements imposed to operation of the software. The program demands the installed Adobe Air package and can be started from any carrier.

**4. Conditions of transfer and sale of program documentation**

All notices within transfer of documentation or its sale are made out in writing and certified by the parties within the contractual relations. The signed contract can be changed or terminated including in connection with essential change of circumstances on the bases and as it should be, provided by articles 451-453 of the Civil Code of the Russian Federation.

**5. Bibliography**

1. Kaluga M. L. Marketing networks in electronic commerce: institutional approach. 3rd edition. – M - Berlin: Direkt-media, 2015.

2. Kaluga M. L. New economy: from crisis of dotcoms to virtual business//Information resources of Russia. – 2013. – No. 2 (132). – Page 27-32.

3. Kaluga M. L. Ekonomicheskaya of the loudspeaker: institutes, systems and self-organization//Economic analysis: theory and practice. – 2014. – No. 5 (356). – Page 27-38.

## ADVERTISING AND TECHNICAL DESCRIPTION "The Manual "Theory and Technique of Educational Work" (the Direction 051000 — "Professional Education", a Profile — a Bachelor Degree)"

*Sterlitamak branch VO Bashkirsky Public Educational Institution state university*

*Filipenko E.V.*

***UDC** 377.5*
***GRNTI** 14.33.05*

**1. Functional purpose of a product, scope, its restrictions**

The manual "Theory and Technique of Educational Work" is intended for the students who are trained in the direction of preparation 051000 - "Professional education" and teachers of pedagogics. Conforms to requirements of FGOS IN.

The purpose of this manual consists in formation at bachelors of system of the major professional and pedagogical knowledge in the course of theoretical and methodical judgment of complete idea of essence, contents, methods and forms of educational work, specifics of the organization of educational activity in educational institutions.

The contents of the manual are submitted by nine independent modules, each of which is devoted to a specific problem (subject): "Technique of educational work as applied branch of the general pedagogics"; "Personality as object and subject of education"; "Technique of the organization and carrying out pedagogical diagnostics in educational process"; "Technique of educational influence and interaction in pedagogical process"; "Theory and technique of the organization of children's student's collective"; "Content of education and main directions of educational work"; "Forms of the organization of educational work"; "Technique of work of the class teacher"; "Educational system: essence, structure, characteristic of the main components".

The structure of each module consists of several interconnected blocks:

*the first block* - theoretical, contains a material statement on a concrete subject of a training course. It is presented in the form of the developed lecture. This block focuses the student on assimilation of basic pedagogical concepts, mastering the pedagogical theory and a technique of educational work, acquaints with innovative pedagogical experience and practice of education in the modern educational organizations;

*the second block* - "Independent work of the student", assumes preparation trained to seminar occupation. This block includes: questions to the forthcoming seminar occupation, subjects of reports and supporting reports, material for discussion in the form of a problem situation or a task with approximate questions for preliminary judgment and definition of own point of view, selection of the argument, the facts, proofs, etc. Work of the student on the second block provides as reproduktivno - the reproducing kinds of activity, and search, creative, research, allowing the student to define independently the ways of preparation for seminar occupation accepted for it.

*the third block* - "Practical work of the student" contains the analysis of pedagogical tasks and situations, exercises of varying complexity in the form of schemes, tables, tests, and also the creative tasks providing implementation of educational projects, the solution of cases, development of scenarios of class hours, the presentations etc. Performance of tasks of this block demands from the trained creative approach and use of necessary professional abilities in the unusual situations and situations which are brought closer to real school practice promotes mastering of the analytical, predictive, design, organizing and communicative abilities system necessary in educational work, develops pedagogical thinking and ability of students to a professional self-reflection. The practical tasks offered by the author can be used by the teacher for an operating control and diagnostics of quality of knowledge, skills of students.

*the fourth block* – "Let's address classics of pedagogics and other scientists" includes methodically valuable primary sources with the texts and quotes selected from them which are subject to the theoretical analysis that gives the chance to each student not only to get acquainted with a problem from the point of view of its modern consideration, but also to address emergence history, pedagogical ideas, experience and educational practice of the famous teachers of last centuries.

All modules of the manual are supplied with the expanded list of the recommended literature of varying complexity in order that students had an opportunity to choose necessary books for independent studying: for preparation for studies, writing of the essay, papers and term

papers, and also for finding of answers and the solution of the problems which arose in practice of own pedagogical activity. It is also necessary to note that the author offered generally modern references, however, also scientific works of classics - the psychologists, teachers, philosophers investigating in due time problems of the theory and a technique of education are not excluded.

The offered contents of the manual and structure of his statement are submitted by the most optimum not only in respect of self-education and professional improvement of students, but also in activity of the teacher using mark and rating system of estimation of knowledge of students.

The logical structure of the manual does possible its application in distance learning of students correspondence students.

**2. The used technical means**

The electronic manual "Theory and Technique of Educational Work" is created with use of the Microsoft Office package.

**3. Special conditions and requirements of organizational, technical and technological character**

Treats necessary conditions of application of the electronic manual: existence of the Intel Pentium computer above; 20 Mb of free disk space; Windows XP OS above.

**4. Conditions of transfer of documentation or its sale**

Condition of transfer of this software product is the contract of purchase and sale signed between the Sterlitamak branch of the Bashkir state university and interested party.

## ADVERTISING AND TECHNICAL DESCRIPTION "The Manual "Etnopedagogika" (the Direction 44.03.02 " Psychology and Pedagogical Education ", a Profile — " Psychology and Social Pedagogics ")"

*Sterlitamak branch of Federal public budgetary educational institution of the higher education "The Bashkir state university"*

*Gizatullina K.H., Asadullina L.F.*

***UDC** 378*

***GRNTI** 14.43.47, 37.01.39*

**1. Functional purpose of a product, scope, its appointment**

Now, in the conditions of active penetration of infocommunication technologies into an education system and accumulation of educational resources in the Internet actual there is a problem of reconsideration of the theory of the organization of educational process and process of management of education, process of transfer of the systematized knowledge, skills and abilities from one generation to another, and creations of new methods and technologies of training. Continuous increase in volume of information and limitation of school hours cause need of an intensification of training, development and deployment of the nonconventional technologies which are based on use of computer facilities.

Emergence of electronic manuals can be perceived as qualitatively new step of informatization of education. Creation of computer technologies in training adjoins to the edition of the manuals of new generation meeting needs of the identity of the trainee.

Development of the active, activity beginning in training, disclosure and use of creative abilities of each trainee are carried out through formation of informative requirements by the organization of search of knowledge in the course of studying of a training material and satisfaction of these requirements that it can be provided with creation of special electronic manuals.

In this electronic manual theoretical material on the main questions of discipline of "Etnopedagogik" is systematized.

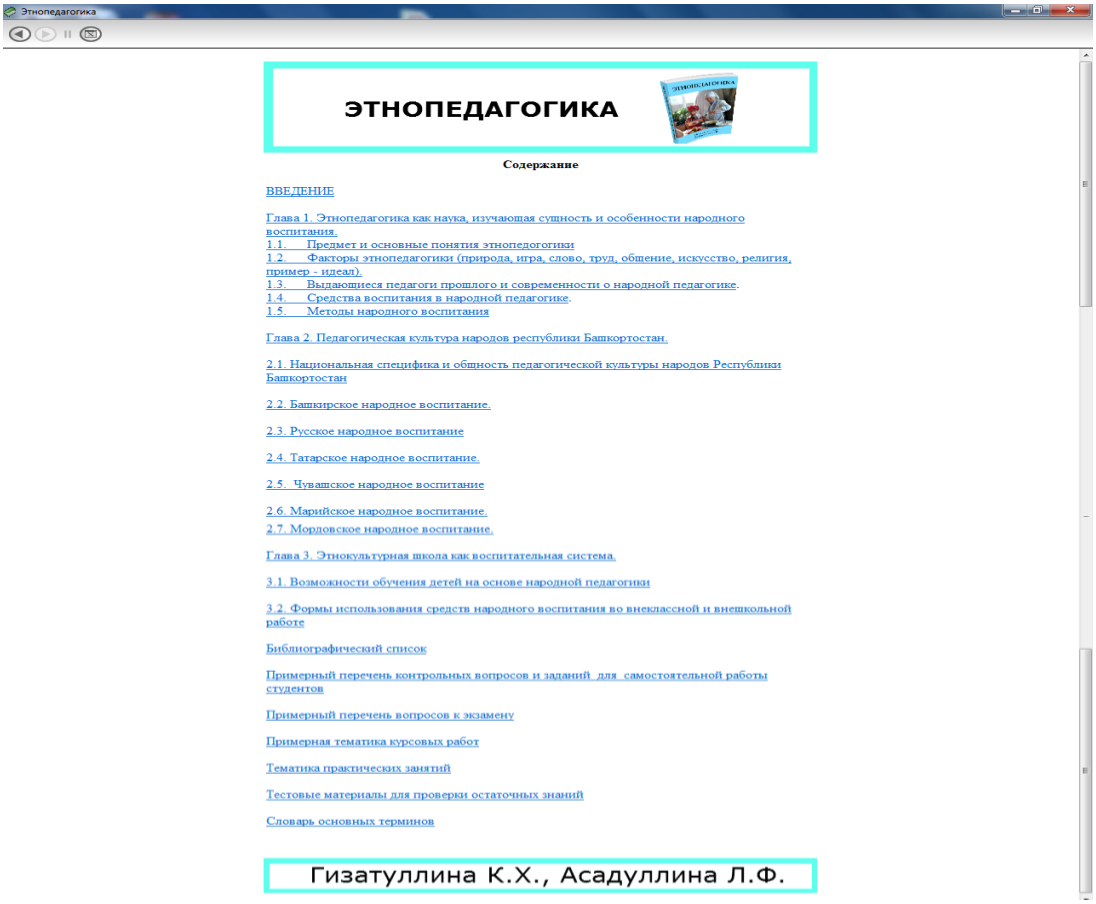
Development stages of the electronic manual:

1. systematization of a training material on discipline of "Etnopedagogik";
2. creation of the hypertext version of the manual on the basis of the HTML language;
3. development of design means of computer graphics;
4. development of the ergonomic, comfortable interface of the user, by means of the software of Macromedia Dreamweaver 8 and eBook Maestro.

Screenshots of the electronic manual are given below -

"Etnopedagogika"

1. Main menu




2. Chapter 1. element

3. Element "2.5. Chuvash national education"

The manual contains the following sections:

Contents

Introduction

Chapter 1. Ethnopedagogics as the science studying essence and features of national education.

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At creation of the electronic manual authors recognized from the fact that students have to create basic knowledge, skills, for formation further of professional competence. The electronic manual can be used both at independent studying of discipline, and on occupation under the leadership of the teacher when studying material.

It is known that independent work of students promotes more effective mastering material, stimulates cognitive and professional interests, develops creative activity and an initiative, promotes growth of motivation of training.

**2. The used technical means**

The electronic manual "Etnopedagogika" is created with use of the software of Macromedia Dreamweaver 8 and eBook Maestro

Text information is created when using the Microsoft Office package 2007.

**3. Special conditions and requirements of organizational, technical and technological character**

Treats necessary conditions of application of the electronic manual: existence of the Intel Pentium computer above; 20 Mb of free disk space; Windows XP OS above.

**4. Conditions of transfer of documentation or its sale.**

Condition of transfer of this software product is the contract of purchase and sale signed between the Sterlitamak branch of the Bashkir state university and interested party.

## ADVERTISING AND TECHNICAL DESCRIPTION "The Electronic Manual "Tax Right" (the Direction 030900.62 — Law, a Profile — a Bachelor Degree)"

*Federal public budgetary educational institution of the higher education "Bashkir state university"*
*Bojko N.N.*

***UDC** 378*
***GRNTI** 14.35.07, 10.21.63*

**1. Functional purpose of a product, scope, its appointment**

The electronic manual in schemes and the tables "Tax Right" is intended for students of the higher education institutions which are trained in the direction of preparation: 030900.62 Law, to a preparation profile: To students, "state and legal", "civil" for assistance, in studying of a complex of theoretical bases of the tax right, in the rational organization of their work at lectures, seminars and a practical training when studying concrete subjects of a course.

Studying of the tax right has not only important theoretical, but also great practical value.

The tax right is a subject matter which enters into all-professional part of a professional cycle of the Federal state educational standard of higher education (FGOS VPO) for bachelors in the direction of preparation "Law".

The tax right as subject matter is backbone for formation at students of the thinking based on understanding of essence of taxes, their missions for formation of public finance, ensuring sovereignty and development of the state. The tax right as subsector of the Financial right, represents set of the precepts of law establishing types of tax and collecting in the state, an order of their collection, and also governing other relations connected with emergence, change and the termination of an obligation for payment of taxes and fees. A subject of regulation of the Tax right are the public relations in the sphere of the taxation: 1) on establishment and introduction of taxes and fees from the organizations and the natural persons listed in the budgetary system; 2) on collection of taxes and collecting (including the relations on their independent payment by taxpayers and compulsory collecting); 3) on implementation of tax control; 4) on accountability for violation of the legislation on taxes and fees; 5) on protection of the rights of the taxpayers, tax agents and other persons participating in tax legal relationship.

In total with other disciplines of a basic unit of professional cycle FGOS VPO the discipline of the tax right provides formation of professional competences of the bachelor.

The electronic manual has great practical value. With its help it is possible to represent visually on the screen in various form of educational and methodical information that allows: to initiate processes of assimilation of knowledge, acquisitions of skills of educational, practical activities; it is effective to exercise control of results of training, repetition; to stir up cognitive activity of trainees; to form and develop certain types of thinking.

The software product contains all subject, necessary on this discipline, and is convenient in use. Thanks to ergonomic design pleasantly and comfortably to work with a grant.

Development stages of the electronic manual:

1) inspection of object and justification of need of creation of the manual for schemes and tables "Tax Right";

2) systematization of a training material according to sections of the course "Tax Right";

3) creation of the hypertext version of an educational and methodical grant on the basis of the HTML language;

4) studying of the existing analogs of the manual in schemes and the tables "Tax Right";

5) creation of objects of interactive virtual demonstration installations, development of design means of computer graphics;

6) development of the ergonomic, comfortable interface of the user, by means of the software of AutoPlay Media Studio 8.0.7.0.

The user interface provides comfortable interaction of the user with the software product. The interface of system is clear and convenient in use, conforms to modern ergonomic requirements.

Screenshots of the electronic manual are given below

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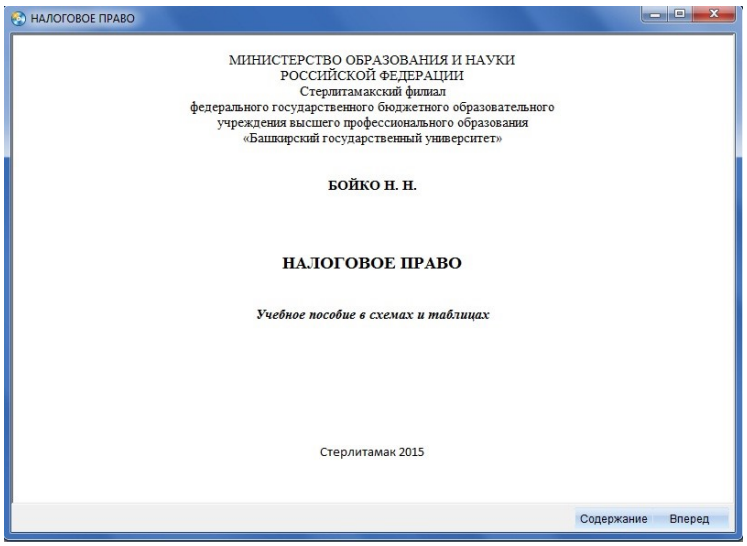


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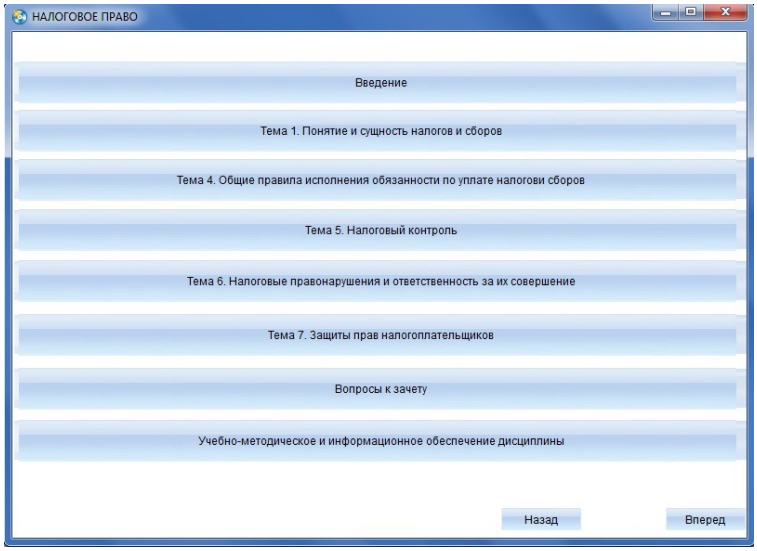


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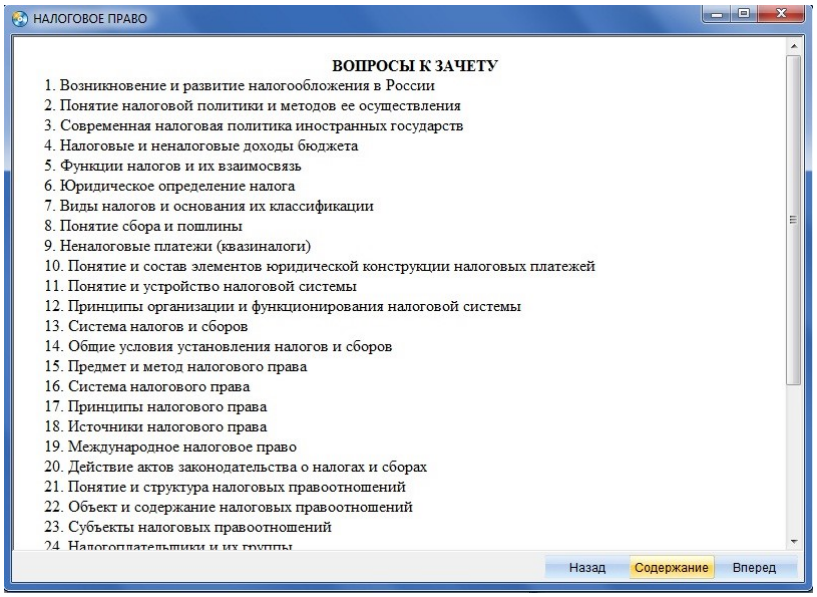


**2. The used technical means**

The interactive Electronic manual in schemes and the tables "Tax Right" is created with use of the software of AutoPlay Media Studio of version 8.0.7.0.

Text information is created when using the Microsoft Office package 2007.

**3. Special conditions and requirements of organizational, technical and technological character**

In schemes and the tables "Tax Right" treats necessary conditions of application of the Electronic manual: existence of the Intel Pentium computer above; 20 Mb of free disk space; Windows XP OS above; software of Flash Player of version 8.0 above.

**4. Conditions of transfer of documentation or its sale**

Condition of transfer of this software product is the contract of purchase and sale signed between the Sterlitamak branch of the Bashkir state university and interested party.

## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic manual "Financial right. The general part" (the direction 030900.62 - Law, a profile - a bachelor degree)"

*Sterlitamak branch of Federal public budgetary educational institution of the higher education "Bashkir state university"*
*Bojko N.N*

***UDC** 378*
***GRNTI** 14.35.07, 10.21.01*

**1. Functional purpose of a product, scope, its appointment**

The electronic manual in schemes and tables "The financial right. The general part" it is intended for students of the higher education institutions which are trained in the direction of preparation: 030900.62 Law, to a preparation profile: To students, "state and legal", "Civil" for assistance, in studying of theoretical bases of the general part of the financial right, in the rational organization of their work at lectures, seminars and a practical training when studying concrete subjects of a course.

Studying of the financial right has not only important theoretical, but also great practical value.

The financial right is a subject matter which enters a basic unit of a professional cycle of the Federal state educational standard of higher education (FGOS VPO) for bachelors in the direction of preparation "Law".

The financial right as subject matter is backbone for formation at students of the thinking based on understanding of essence of the legal norms governing the public relations which arise in the course of education, distribution and use of monetary funds of the state and the local governments necessary for realization of their tasks.

In system of the financial right parts, sections, subsectors, institutes are allocated. The largest divisions of the Russian financial law – part the General and Special. Justification of need of their allocation and determination of content of each of them belong to important achievements of domestic legal science. However work in this direction demands continuation and deepening taking into account the new phenomena in life of society and state.

Norms of the financial right which is affirmed by the basic principles, legal forms and methods of financial activity of the state and municipalities, system of the government bodies which are carrying out financial activity, and differentiation of their powers in this area, the main lines of a financial legal status of other subjects with which they enter relationship, general provisions on the organization of financial control, its form and methods and another similar to them financial precepts of law belong to the general part. They act on the scale of all financial activity of the state (municipalities) and have for it a general meaning.

In total with other disciplines of a basic unit of professional cycle FGOS VPO the discipline of the financial right provides formation of professional competences of the bachelor.

The contents of the manual conform to modern requirements and reflect a current state of the general part of the Russian science of the financial right, and also reality of a domestic law

and order in a due measure. The grant is prepared according to obligatory requirements of the second generation of the State educational standards of higher education and requirements imposed to educational editions for higher educational institutions in "Law". The illustrated schemes and tables stated in this edition correspond to the training program at the rate "Financial Right".

The electronic manual has great practical value. With its help it is possible to represent visually on the screen in various form of educational and methodical information that allows: to initiate processes of assimilation of knowledge, acquisitions of skills of educational, practical activities; it is effective to exercise control of results of training, repetition; to stir up cognitive activity of trainees; to form and develop certain types of thinking.

The software product contains all subject, necessary on this discipline, and is convenient in use. Thanks to ergonomic design pleasantly and comfortably to work with a grant.

Development stages of the electronic manual:

1) inspection of object and justification of need of creation of the manual for schemes and tables "Financial right. General part";

2) systematization of a training material according to sections of the course "Financial Right";

3) creation of the hypertext version of an educational and methodical grant on the basis of the HTML language;

4) studying of the existing analogs of the manual in schemes and tables "The financial right. General part";

5) creation of objects of interactive virtual demonstration installations, development of design means of computer graphics;

6) development of the ergonomic, comfortable interface of the user, by means of the software of AutoPlay Media Studio 8.0.7.0.

The user interface provides comfortable interaction of the user with the software product. The interface of system is clear and convenient in use, conforms to modern ergonomic requirements.

Screenshots of the electronic manual are given below

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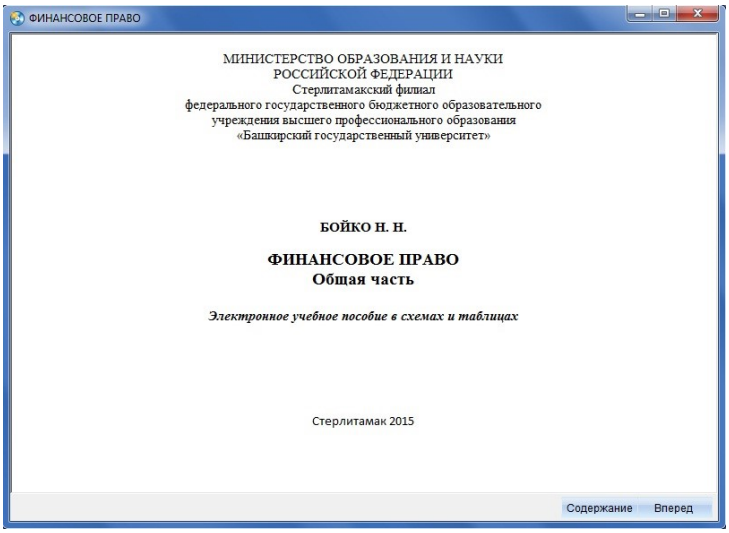


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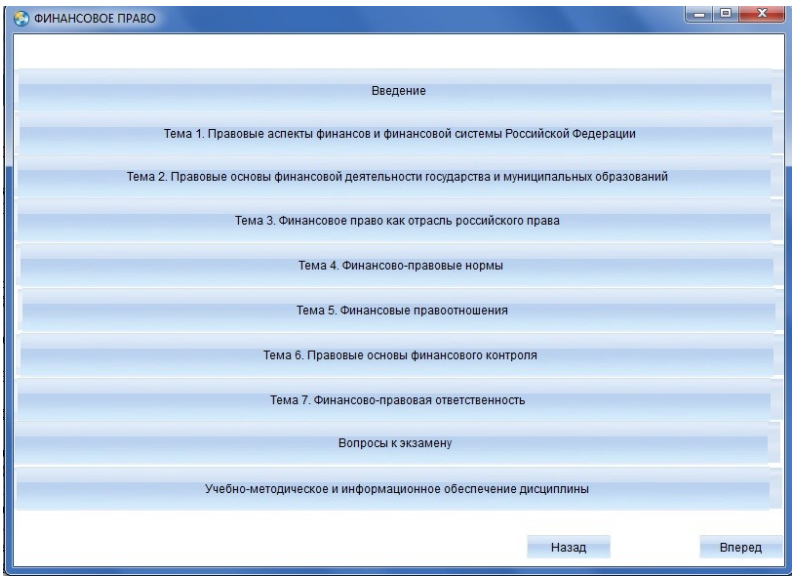


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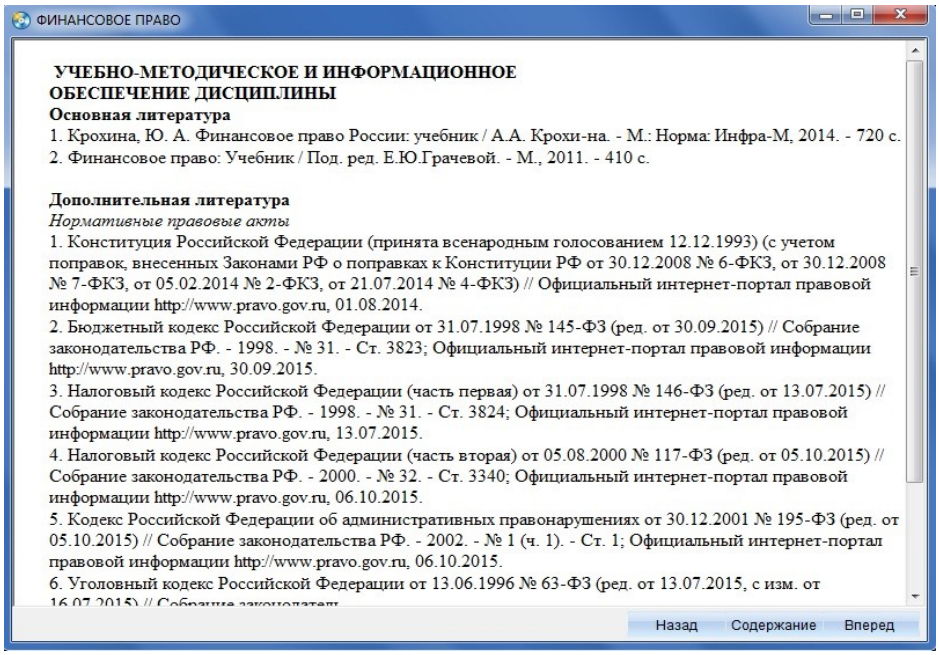


**2. The used technical means**

The interactive Electronic manual in schemes and tables "The financial right. The general part" it is created with use of the software of AutoPlay Media Studio of version 8.0.7.0.

Text information is created when using the Microsoft Office package 2007.

**3. Special conditions and requirements of organizational, technical and technological character**

To necessary conditions of application of the Electronic manual in schemes and tables "The financial right. The general part" belongs: existence of the Intel Pentium computer above; 20 Mb of free disk space; Windows XP OS above; software of Flash Player of version 8.0 above.

**4. Conditions of transfer of documentation or its sale.**

Condition of transfer of this software product is the contract of purchase and sale signed between the Sterlitamak branch of the Bashkir state university and interested party.

# ADVERTISING AND TECHNICAL DESCRIPTION "The Electronic Educational and Methodical Complex "Criminal Trial" (the Direction 030900.62 — Law, a Profile — the Bachelor)"

*Sterlitamak branch*
*Federal public budgetary educational institution of the higher education*
*"The Bashkir state university"*
*Galimov EH.R.*

***UDC** 378*
***GRNTI** 14.35.07, 10.79.01*

**1. Functional purpose of a product, scope, its appointment**

The discipline "Criminal trial" is included into a basic unit of a professional cycle of disciplines of FGOS VPO in the Law direction.

The discipline is studied on the second year. This course is the main legal discipline when training lawyers.

Criminal trial plays a key role in ensuring protection of the rights and freedoms of citizens against criminal encroachments, protection of a public law and order and safety, provides realization of norms of criminal law, is closely connected with operational search activity and is basic in relation to criminalistics is based on knowledge of the theory of the state and the right, and is a necessary condition for successful mastering other related legal subjects (a constitutional right, criminal law, the criminal and executive right, the operational search right, civil law, civil legal proceedings, public prosecutor's supervision, administrative law, etc.).

The knowledge, skills and abilities received during studying of discipline have to be used by students comprehensively:

– at all grade levels in higher education institution: when studying various disciplines of the curriculum, performing homeworks, preparation of papers, final baccalaureate work;

– during further training in a magistracy and postgraduate study;

– in the course of the follow-up professional activity at the solution of the applied tasks demanding receiving, processing and the analysis of actual legal information.

– in respecting the rule of law and formation of their professionalism

The purposes of development of discipline "Criminal trial" are:

- formation at students of basic knowledge in the field of criminal trial that is a necessary condition of professional activity of the lawyer;
- acquaintance with standards of the existing Criminal Procedure Code of the Russian Federation;
- formation of ability is correct to understand and interpret criminally legal procedure;
- studying of essence and value of the main criminal procedure institutes;
- mastering skills of application of standards of the Criminal Procedure Code of the Russian Federation in concrete situations.

The modern period of development of a civilized society characterizes informatization process. One of the priority directions of process of informatization of modern society is education informatization – introduction of means of new information technologies in an education system.

As the main task of educational policy achievement of new, modern quality of education, its compliance to actual and perspective needs of the personality, society and state moves forward.

This software product contains all main materials and recommendations about the subject "Criminal trial".

The electronic complex was developed by means of the software of AutoPlay Media Studio 8.0.7.0., that allowed to create the comfortable, ergonomic and systematized user's interface.

Screenshots of an electronic educational and methodical complex on discipline "Criminal trial" are given below

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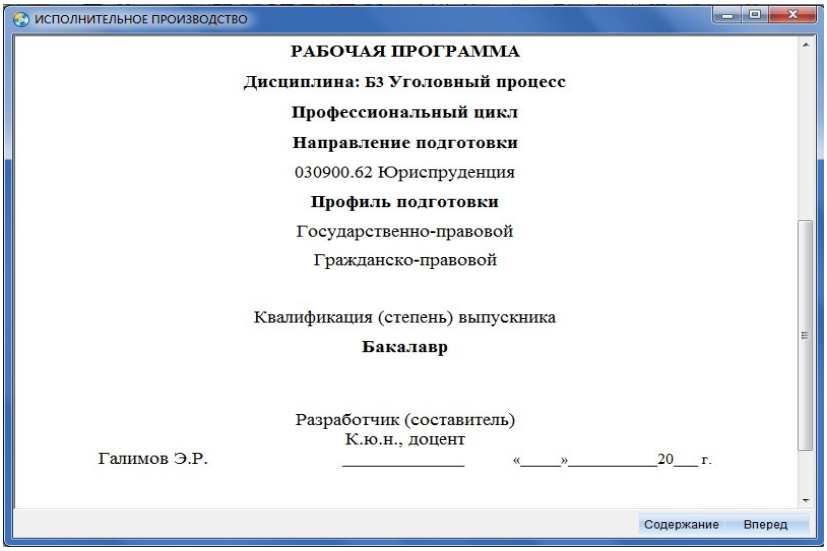


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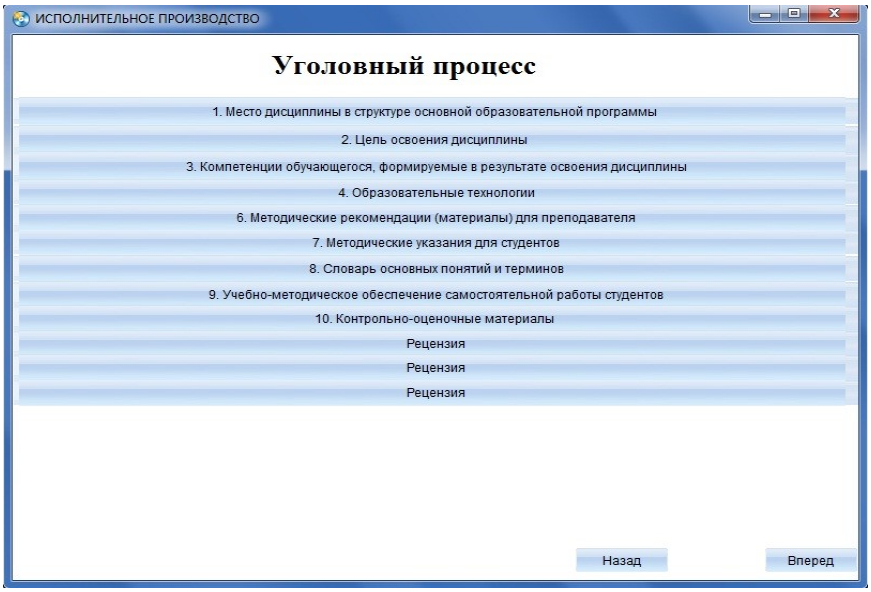


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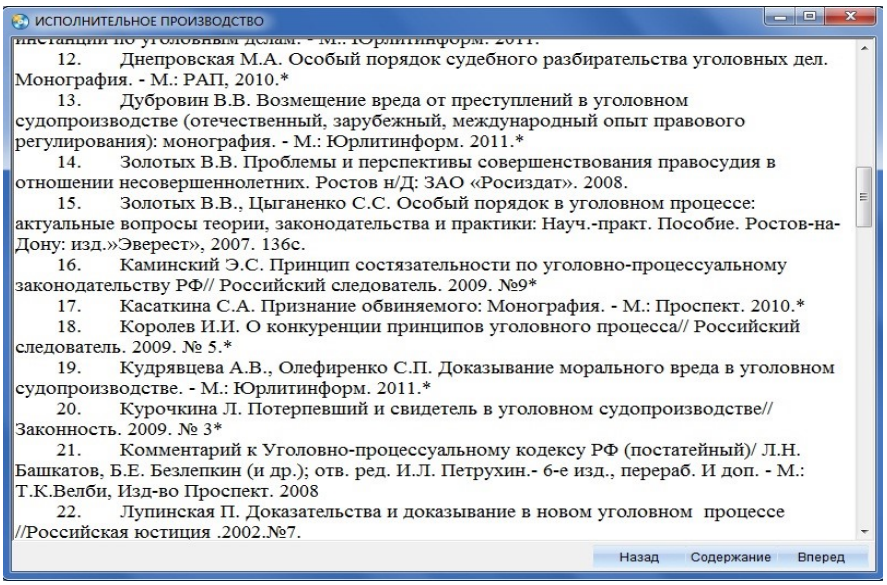



**2. The used technical means**

The electronic educational and methodical complex on discipline "Criminal process" is created with use of the software of AutoPlay Media Studio of version 8.0.7.0.

Text information is created when using the Microsoft Office package 2007.

The electronic educational and methodical complex on discipline "Criminal process" can be used both at independent studying of disciplines, and on occupation under the leadership of the teacher when studying material.

The purpose of independent work of students consists in full assimilation of a training material and in development of skills of self-education through work with scientific-theoretical literature and the practical materials necessary for profound studying of the office right, and also development in them of steady abilities to independent (without the assistance of the teacher) to studying, a statement and application of the obtained information.

**3. Special conditions and requirements of organizational, technical and technological character**

Electronic educational and methodical complex on discipline "Criminal process" belongs to necessary conditions of application of the edition: existence of the Intel Pentium computer above; 20 Mb of free disk space; Windows XP OS above; software of Flash Player of version 8.0 above.

**4. Conditions of transfer of documentation or its sale**

Condition of transfer of this software product is the contract of purchase and sale signed between the Sterlitamak branch of the Bashkir state university and interested party.

## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic Workbook on Discipline " the Theory of the State and the Right " (the Direction 030900.62 — Law, a Profile — the Bachelor)"

*Sterlitamak branch*
*Federal public budgetary educational institution of the higher education*
*"Bashkir state university"*
*Ivancova G.A*

***UDC** 378*
***GRNTI** 14.35.07, 10.07.20*

**1. Functional purpose of a product, scope, its appointment**

The modern period of development of a civilized society characterizes intensive process of informatization. Informatization of education is one of the most important directions of process of informatization.

One of the main tasks of policy in education achievement of new, modern quality of education, compliance to his actual requirements of society, persons and the states moves forward.

The electronic workbook on discipline "The theory of the state and the right" has theoretical and practical value. With its help it is possible to provide visually information demanding practical processing of material that will allow to improve processes of assimilation of knowledge, acquisitions of skills of educational activity; it is effective to exercise control of results of training, repetition; to stir up cognitive activity of trainees; to form and develop certain types of thinking.

The discipline "The office right" is included into variable part of an educational professional cycle of disciplines of the Federal state educational standard of higher education in the direction of preparation "030900.62 Law", to a profile of preparation "State and legal". The knowledge, skills received during studying of discipline have to be used by students comprehensively: at all grade levels in higher education institution; during further training in a magistracy; in the course of the follow-up professional activity at the solution of the tasks demanding application of actual legal information.

The course of the theory of the state and the right studied in legal higher education institutions is urged to play a role of a peculiar base with which the student begins comprehensive and system mastering legal specialty. Therefore in a comprehensive plan of legal education this course carries out three interconnected tasks:

- arms students with knowledge of system of concepts and categories, possession of which is a necessary condition of successful assimilation of concrete legal disciplines, understanding of their interrelations among themselves and with the theory of the state and the right, uniform understanding of the problems inherent in several or all legal disciplines;
- forms a basis of professional outlook of students, develops at them ability from the correct methodological positions to approach the analysis legal the phenomenon, to see the original reasons of their emergence and development, to reduce external properties, signs of the legal phenomena and processes to their internal, natural communications and dependences;
- develops skills correctly to interpret normative legal acts, to carry out their systematization and to prepare separate types of legal documents, and also it is logically correct to express and prove the position on common problems of the state and the right, freely to operate with legal concepts".

The course of lectures is presented by separate subjects. The recommended literature and the list of normative legal acts is presented.

When developing an electronic workbook on discipline "The theory of the state and the right" were passed the following stages:

1) inspection of object and justification of need of creation of an electronic workbook on discipline "The theory of the state and the right"

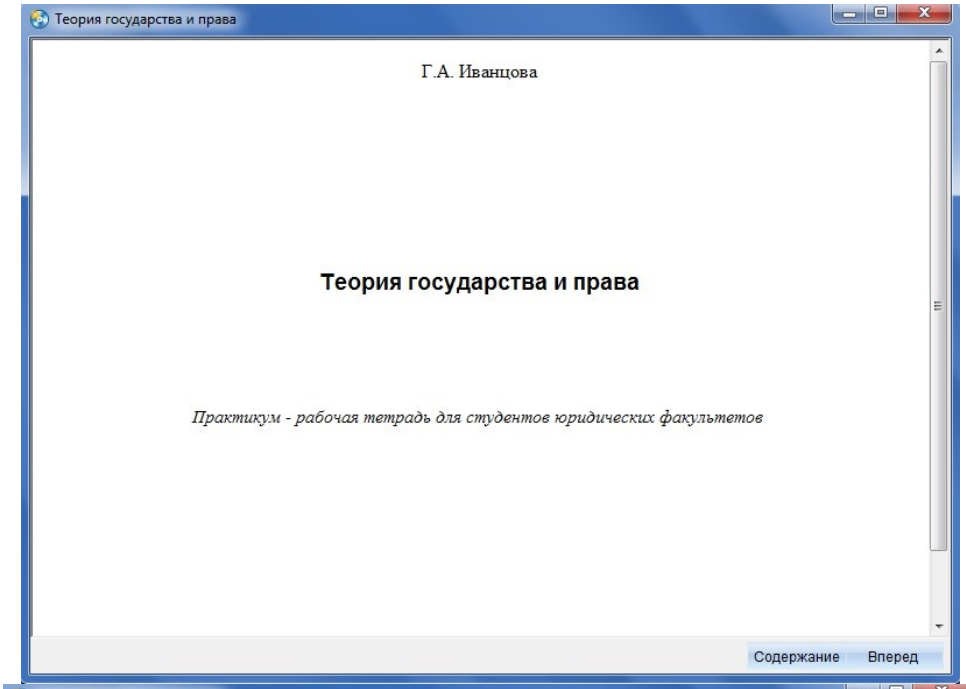
2) systematization of a training material;

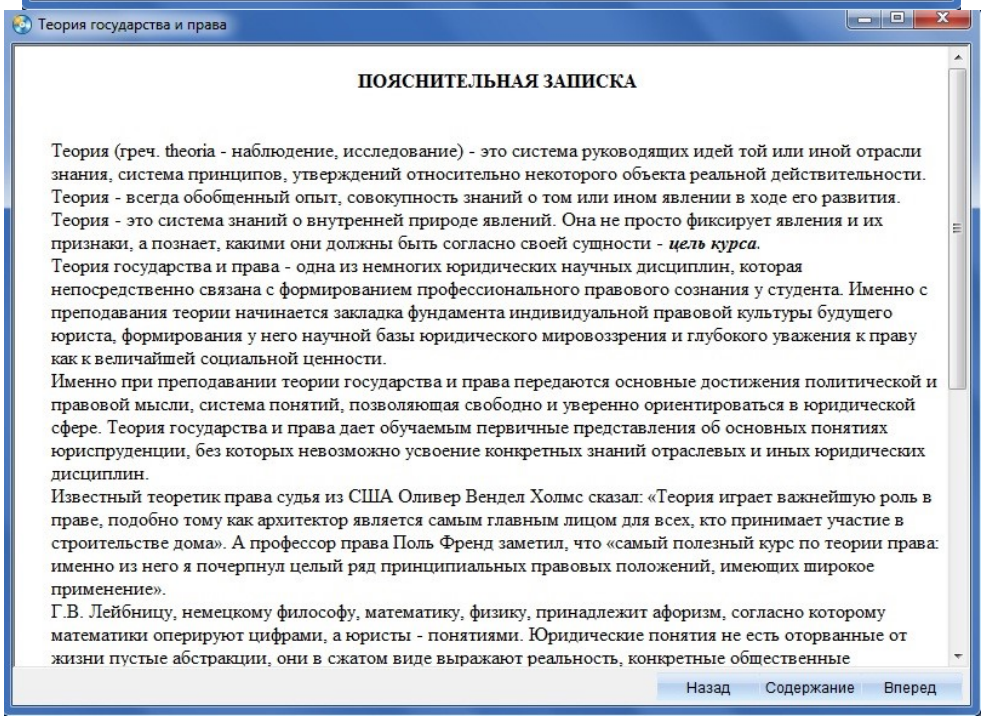
3) creation of objects of interactive virtual demonstration installations, development of design means of computer graphics;

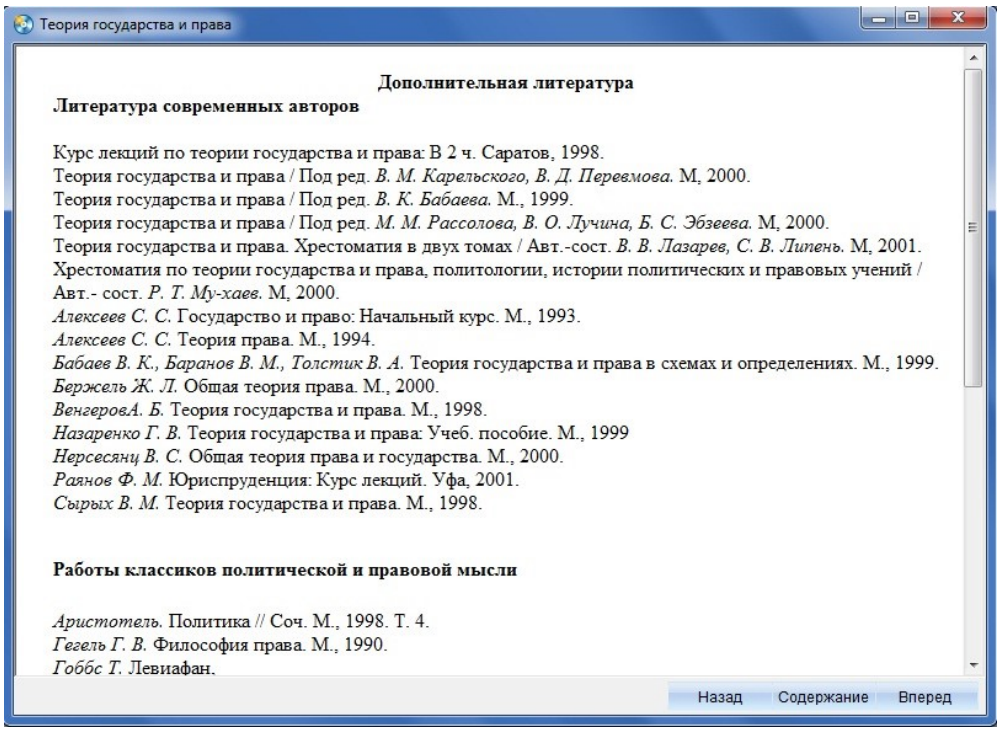
4) development of the ergonomic, comfortable interface of the user, by means of the software of AutoPlay Media Studio 8.0.7.0.

The user interface provides comfortable interaction of the user with the software product. The interface of system is clear and convenient in use, conforms to modern ergonomic requirements.

Screenshots of an electronic workbook on discipline "The theory of the state and the right" are given below






**2. The used technical means**

The electronic workbook on discipline "The theory of the state and the right" is created with use of the software of AutoPlay Media Studio of version 8.0.7.0.

Text information is created when using the Microsoft Office package 2007.

The electronic workbook on discipline "The theory of the state and the right" can be used both at independent studying of disciplines, and on occupation under the leadership of the teacher when studying material.

The purpose of independent work of students consists in full assimilation of a training material and in development of skills of self-education through work with scientific-theoretical literature and the practical materials necessary for profound studying of the office right, and also development in them of steady abilities to independent (without the assistance of the teacher) to studying, a statement and application of the obtained information.

**3. Special conditions and requirements of organizational, technical and technological character**

Electronic workbook on discipline "The theory of the state and the right" belongs to necessary conditions of application of the edition: existence of the Intel Pentium computer above; 20 Mb of free disk space; Windows XP OS above; software of Flash Player of version 8.0 above.

**4. Conditions of transfer of documentation or its sale.**

Condition of transfer of this software product is the contract of purchase and sale signed between the Sterlitamak branch of the Bashkir state university and interested party.

## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic practical grant "Civil law: legal regulation of intellectual property" ("030900.62-Law, a profile-a bachelor degree, a magistracy)" direction

*VO FGBOU Sterlitamak branch Bashkir state university*
*Timofeeva R.I.*

***UDC** 378*

*GRNTI 5.07, 10.27.01*

**1. Functional purpose of a product, scope, its appointment**

This grant is intended for students in the specialty "030501.65 – Law", in the 030900.62-Law direction. The educational edition is made according to the state educational standard of higher education

The real practical grant is intended for fuller studying of discipline "Civil law" by students of law department in the part devoted to regulation of intellectual property. It is caused by need of permission of the concrete actual situations arising in the relations where as object results intellectual property act. This course is oriented both on independent cognitive activity of students, and on their ability to work with necessary sources and scientific literature.

Development stages of an electronic practical grant on discipline "Civil law: legal regulation of intellectual property"

1) inspection of object and justification of need of creation of an electronic course of lectures on discipline "Civil law: legal regulation of intellectual property"

2) systematization of a training material;

3) creation of the hypertext version of an electronic practical grant on discipline "Civil law: legal regulation of intellectual property" on the basis of the HTML language;

4) studying of the existing analogs of an electronic practical grant on discipline "Civil law: legal regulation of intellectual property";

5) creation of objects of interactive virtual demonstration installations, development of design means of computer graphics;

6) development of the ergonomic, comfortable interface of the user, by means of the software of AutoPlay Media Studio 8.0.7.0.

The user interface provides comfortable interaction of the user with the software product. The interface of system is clear and convenient in use, conforms to modern ergonomic requirements.

Screenshots are given below

Electronic practical grant on discipline "Civil law: legal regulation of intellectual property"

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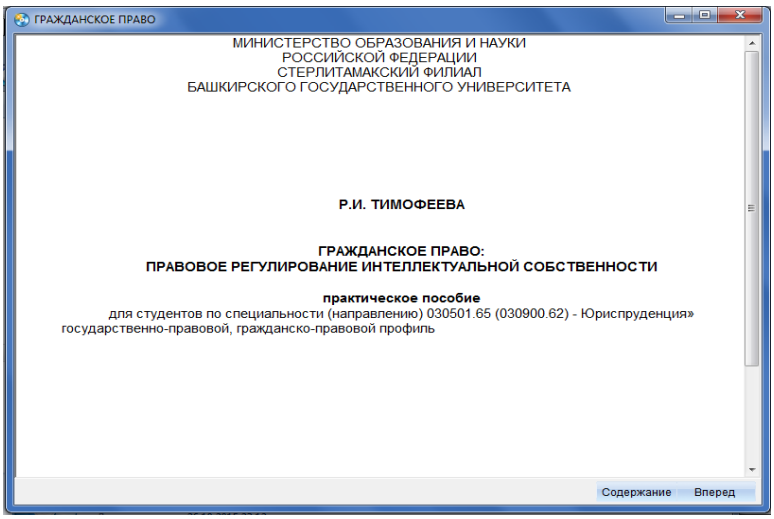


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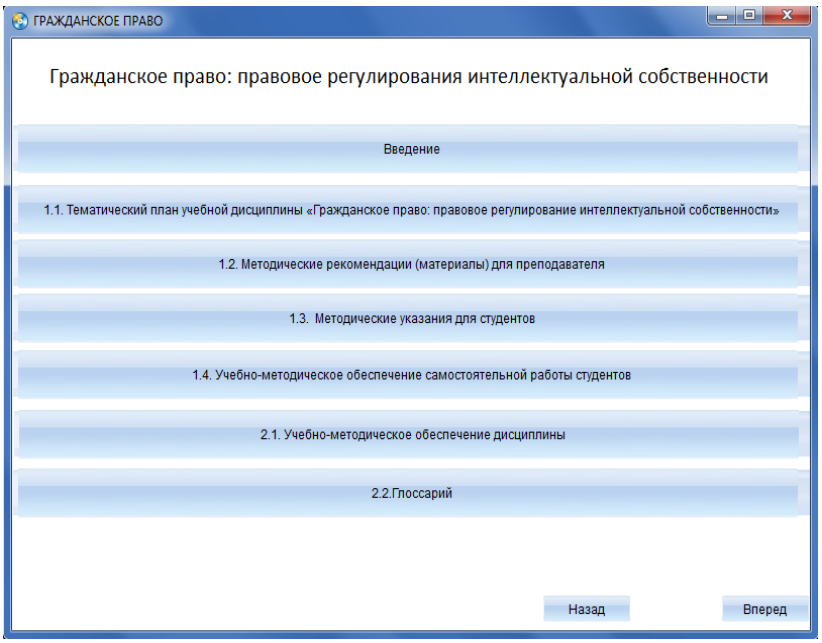


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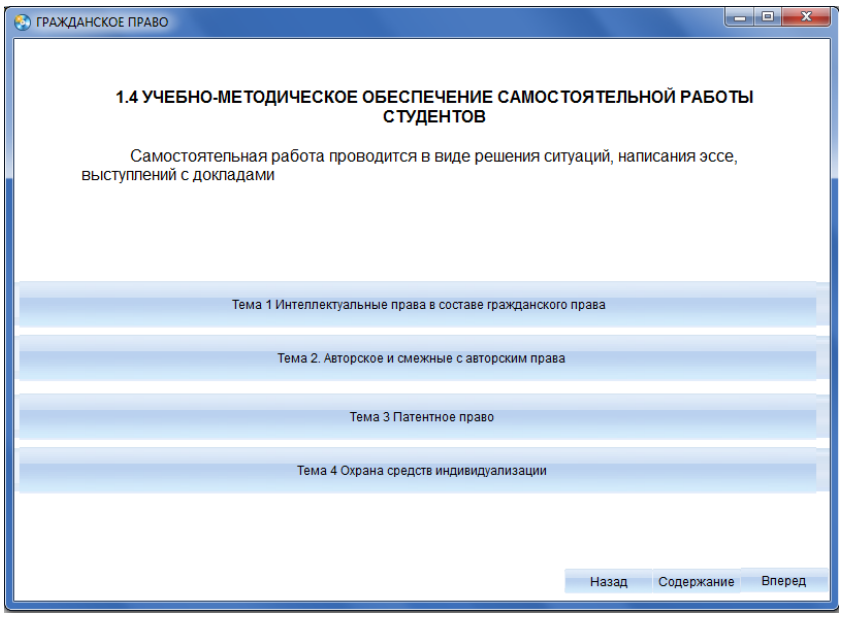



**2. The used technical means**

Electronic practical grant on discipline "Civil law: legal regulation of intellectual property" is created with use of the software of AutoPlay Media Studio of version 8.0.7.0.

Text information is created when using the Microsoft Office package 2007.

Electronic practical grant on discipline "Civil law: legal regulation of intellectual property" can be used both at independent studying of disciplines, and on occupation under the leadership of the teacher when studying material.

The purpose of independent work of students consists in full assimilation of a training material and in development of skills of self-education through work with scientific-theoretical literature and the practical materials necessary for profound studying of the office right, and also development in them of steady abilities to independent (without the assistance of the teacher) to studying, a statement and application of the obtained information.

**3. Special conditions and requirements of organizational, technical and technological character**

To necessary conditions of application of the edition the Electronic practical grant on discipline "Civil law: legal regulation of intellectual property" belongs: existence of the Intel

Pentium computer above; 25 Mb of free disk space; Windows XP OS above; software of Flash Player of version 8.0 above.

**4. Conditions of transfer of documentation or its sale**

Condition of transfer of this software product is the contract of purchase and sale signed between the Sterlitamak branch of the Bashkir state university and interested party.

## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic Educational and Methodical Grant " the Enterprise Right " (the Direction 030900.62 — Law)"

*Sterlitamak branch*
*Federal public budgetary educational institution of the higher education*
*"The Bashkir state university"*
*Timofeeva R.I., Umetbaeva YU.I.*

***UDC*** *378*
***GRNTI*** *14.35.07, 10.27.01*

**1. Functional purpose of a product, scope, its appointment**

This course is intended for students in the specialty "030501.65 – Law", in the 030900.62-Law direction. The educational edition is made according to the state educational standard of higher education.

The present edition is intended for fuller studying of discipline "The enterprise right" by students of law department. Legal regulation in the sphere of the enterprise relations is caused by objective conditions of development of society and state as one of the principle of the constitutional state. It is caused by need of permission of the concrete actual situations arising in the sphere of business, to ways of protection of the rights and interests of businessmen and also responsibility for the sphere of business activity;

This course is oriented both on independent cognitive activity of students, and on their ability to work with necessary sources and scientific literature. Legal regulation in the sphere of the enterprise relations is caused by objective conditions of development of society and state as one of the principle of the constitutional state. In the conditions of socially oriented market economy the modern Russian enterprise law combines the centralized and contractual, dispositive and imperative regulation of the relations. Students have to be able to use theoretical knowledge in the course of the independent solution of practical questions, to use standard material, to process documents.

The course "Enterprise Right" includes two sections. In the first section of a course questions of right subjectivity, a legal regime of property of economic entities, attraction of resources necessary for the businessman, etc. are considered.

In the second section various aspects of activity of the businessman as systems of the relations in indissoluble unity of the public and private beginnings are considered.

Development stages of an electronic educational and methodical grant on discipline "The enterprise right"

1) inspection of object and justification of need of creation of an electronic course of lectures on discipline "The enterprise right"

2) systematization of a training material;

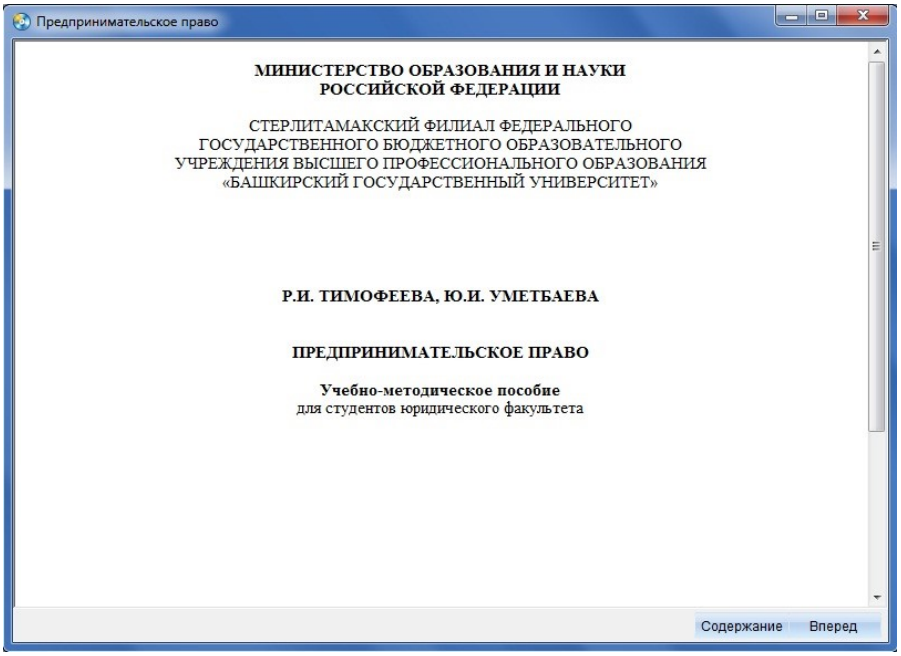
3) creation of objects of interactive virtual demonstration installations, development of design means of computer graphics;

4) development of the ergonomic, comfortable interface of the user, by means of the software of AutoPlay Media Studio 8.0.7.0.

The user interface provides comfortable interaction of the user with the software product. The interface of system is clear and convenient in use, conforms to modern ergonomic requirements.

Screenshots of the Electronic educational and methodical grant on discipline "The enterprise right" are given below

1

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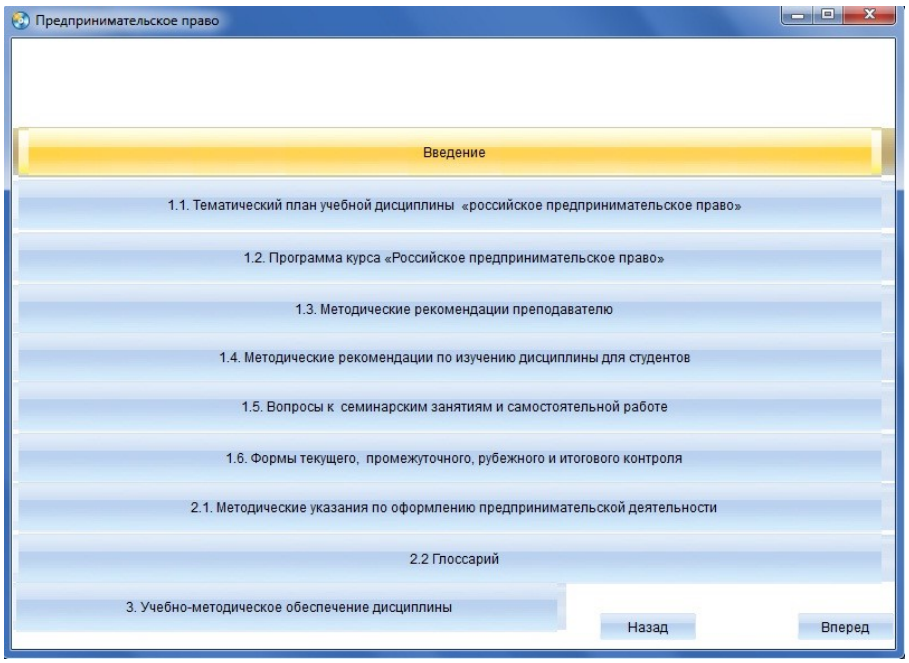


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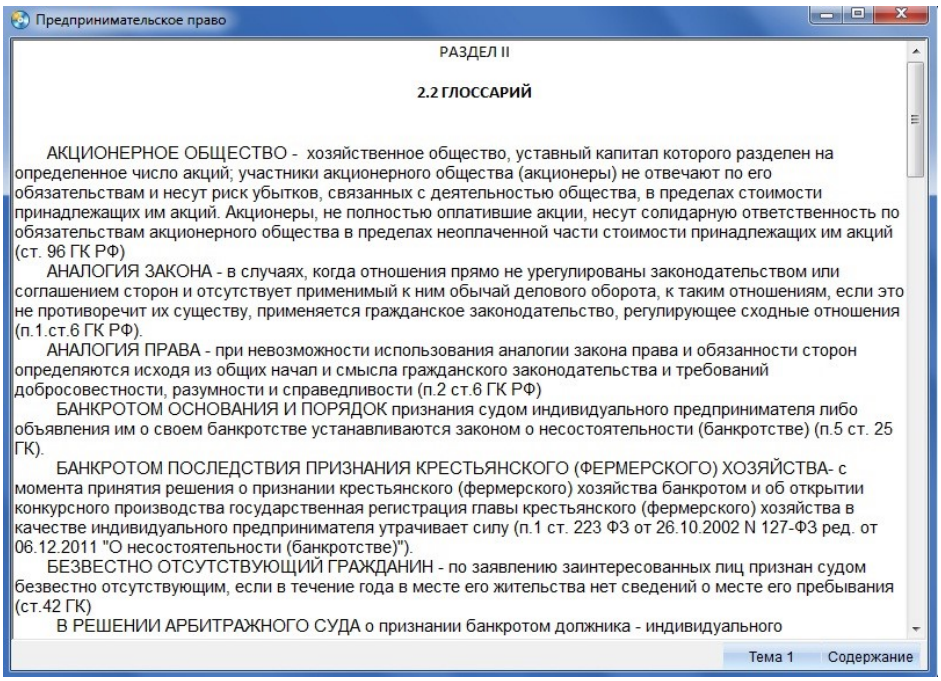



**2. The used technical means**

The electronic educational and methodical grant on discipline "The enterprise right" is created with use of the software of AutoPlay Media Studio of version 8.0.7.0.

Text information is created when using the Microsoft Office package 2007.

Electronic practical grant on discipline "Civil law: legal regulation of intellectual property" can be used both at independent studying of disciplines, and on occupation under the leadership of the teacher when studying material.

The purpose of independent work of students consists in full assimilation of a training material and in development of skills of self-education through work with scientific-theoretical literature and the practical materials necessary for profound studying of the office right, and also development in them of steady abilities to independent (without the assistance of the teacher) to studying, a statement and application of the obtained information.

**3. Special conditions and requirements of organizational, technical and technological character**

Electronic educational and methodical grant on discipline "The enterprise right" belongs to necessary conditions of application of the edition: existence of the Intel Pentium computer above; 20 Mb of free disk space; Windows XP OS above; software of Flash Player of version 8.0 above.

**4. Conditions of transfer of documentation or its sale.**

Condition of transfer of this software product is the contract of purchase and sale signed between the Sterlitamak branch of the Bashkir state university and interested party.

## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic Lectures on Discipline " the Municipal Right " (the Direction 030900.62 — Law)"

*Sterlitamak branch*
*Federal public budgetary educational institution of the higher education*
*"The Bashkir state university"*
*Usmanova R.M.*

***UDC** 378*

***GRNTI*** *14.35.07, 10.16.01*

**1. Functional purpose of a product, scope, its appointment**

Electronic lectures on discipline "The municipal right" are intended for students of the higher education institutions which are trained in the direction of preparation: 030900.62 Law, to a preparation profile: To students, "state and legal", "Civil" for assistance, in studying of this discipline.

Studying of the Municipal right has not only important theoretical, but also great practical value.

The abstract of lectures is prepared according to the program of a course of the municipal right, on the basis of the current legislation of the Russian Federation regulating local government taking into account all changes and additions made to the legislation as of December 1, 2015.

Material is stated in a clear accessible form and intended for studying of the municipal right by listeners and students of legal higher education institutions and faculties.

Electronic lectures on discipline have "The municipal right" great practical value. With its help it is possible to represent visually on the screen in various form of educational and methodical information that allows: to initiate processes of assimilation of knowledge, acquisitions of skills of educational, practical activities; it is effective to exercise control of results of training, repetition; to stir up cognitive activity of trainees; to form and develop certain types of thinking.

The software product contains all subject, necessary on this discipline, and is convenient in use. Thanks to ergonomic design pleasantly and comfortably to work with a grant.

Development stages of the electronic manual:

1) systematization of a training material according to sections of the course "Municipal Right";

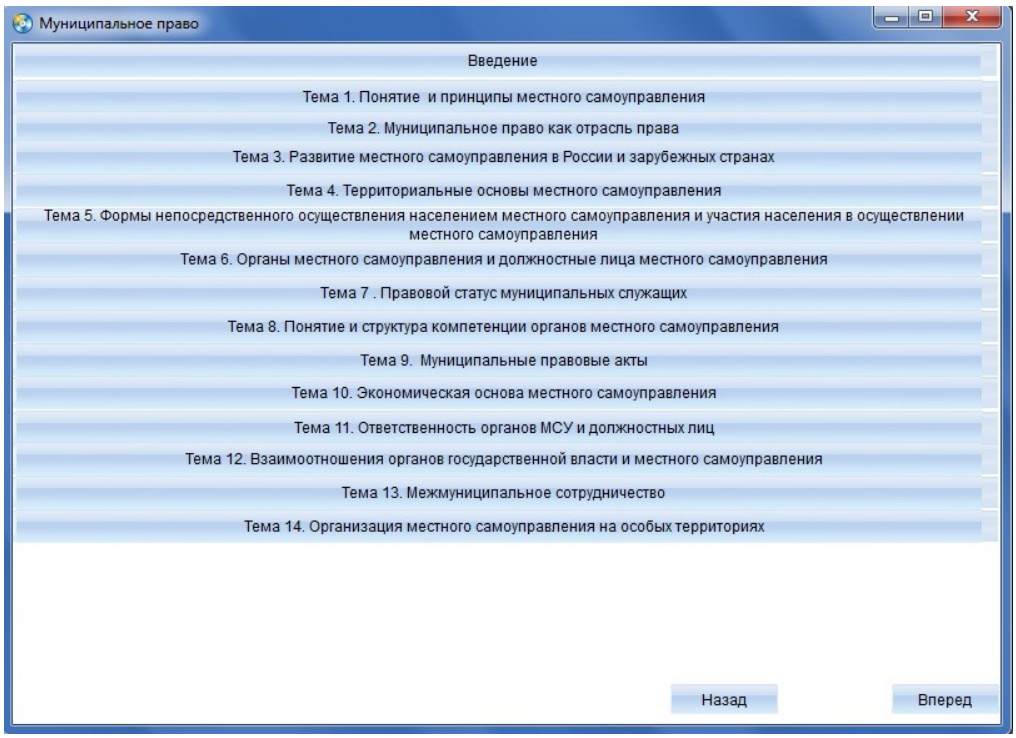
2) creation of objects of interactive virtual demonstration installations, development of design means of computer graphics;

3) development of the ergonomic, comfortable interface of the user, by means of the software of AutoPlay Media Studio 8.0.7.0.

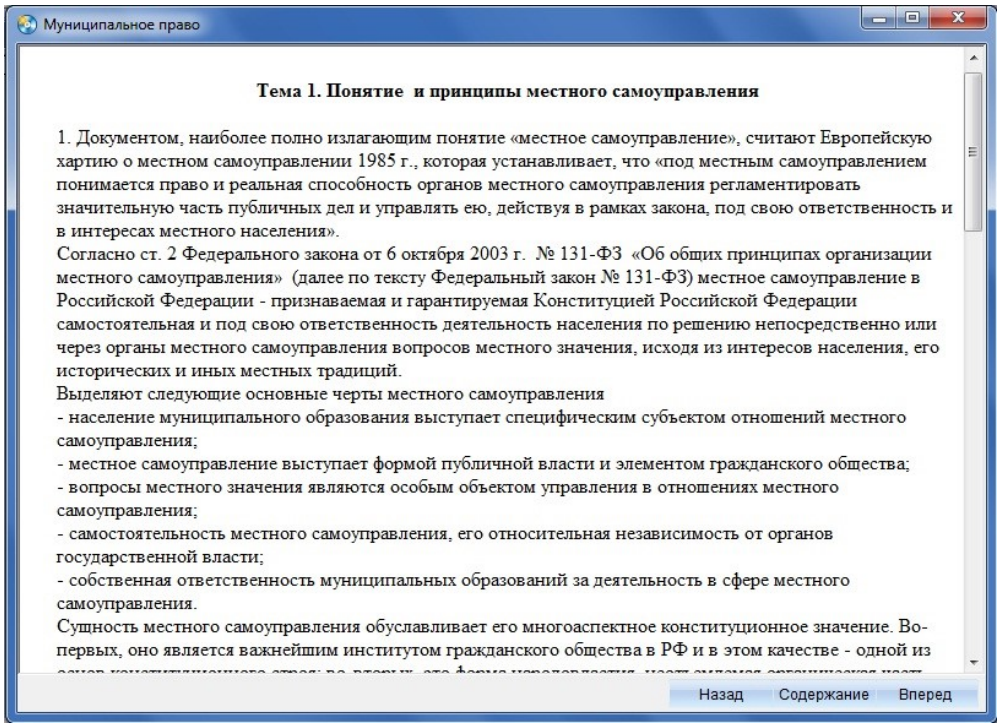
The user interface provides comfortable interaction of the user with the software product. The interface of system is clear and convenient in use, conforms to modern ergonomic requirements.

Screenshots electronic educational lectures are given below

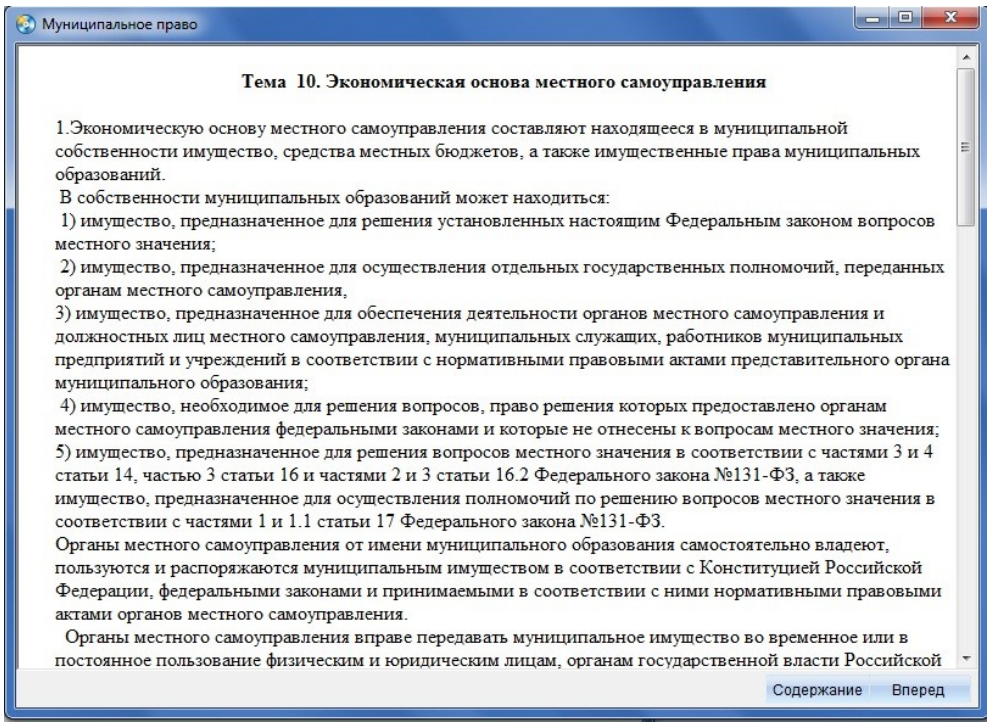
1


Муниципальное право
Введение
Тема 1. Понятие и принципы местного самоуправления
Тема 2. Муниципальное право как отрасль права
Тема 3. Развитие местного самоуправления в России и зарубежных странах
Тема 4. Территориальные основы местного самоуправления
Тема 5. Формы непосредственного осуществления населением местного самоуправления и участия населения в осуществлении местного самоуправления
Тема 6. Органы местного самоуправления и должностные лица местного самоуправления
Тема 7 . Правовой статус муниципальных служащих
Тема 8. Понятие и структура компетенции органов местного самоуправления
Тема 9. Муниципальные правовые акты
Тема 10. Экономическая основа местного самоуправления
Тема 11. Ответственность органов МСУ и должностных лиц
Тема 12. Взаимоотношения органов государственной власти и местного самоуправления
Тема 13. Межмуниципальное сотрудничество
Тема 14. Организация местного самоуправления на особых территориях
Назад
Вперед

2


Муниципальное право
Тема 1. Понятие и принципы местного самоуправления
1. Документом, наиболее полно излагающим понятие «местное самоуправление», считают Европейскую хартию о местном самоуправлении 1985 г., которая устанавливает, что «под местным самоуправлением понимается право и реальная способность органов местного самоуправления регламентировать значительную часть публичных дел и управлять ею, действуя в рамках закона, под свою ответственность и в интересах местного населения».
Согласно ст. 2 Федерального закона от 6 октября 2003 г. № 131-ФЗ «Об общих принципах организации местного самоуправления» (далее по тексту Федеральный закон № 131-ФЗ) местное самоуправление в Российской Федерации - признаваемая и гарантируемая Конституцией Российской Федерации самостоятельная и под свою ответственность деятельность населения по решению непосредственно или через органы местного самоуправления вопросов местного значения, исходя из интересов населения, его исторических и иных местных традиций.
Выделяют следующие основные черты местного самоуправления
- население муниципального образования выступает специфическим субъектом отношений местного самоуправления;
- местное самоуправление выступает формой публичной власти и элементом гражданского общества;
- вопросы местного значения являются особым объектом управления в отношениях местного самоуправления;
- самостоятельность местного самоуправления, его относительная независимость от органов государственной власти;
- собственная ответственность муниципальных образований за деятельность в сфере местного самоуправления.
Сущность местного самоуправления обуславливает его многоаспектное конституционное значение. Во-первых, оно является важнейшим институтом гражданского общества в РФ и в этом качестве - одной из
Назад
Содержание
Вперед

3




**2. The used technical means**

Electronic lectures on discipline "The municipal right" is created with use of the software of AutoPlay Media Studio of version 8.0.7.0.

Text information is created when using the Microsoft Office package 2007.

The educational and methodical grant contains the following sections:

**3. Special conditions and requirements of organizational, technical and technological character**

"The municipal right" belongs to necessary conditions of application of Electronic lektsitsa on discipline: existence of the Intel Pentium computer above; 20 Mb of free disk space; Windows XP OS above; software of Flash Player of version 8.0 above.

**4. Conditions of transfer of documentation or its sale**

Condition of transfer of this software product is the contract of purchase and sale signed between the Sterlitamak branch of the Bashkir state university and interested party.

## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic Course of Lectures " the Office Right " (the Direction 030900.62 — Law, a Profile Bachelor Degree)"

*Sterlitamak branch of Federal public budgetary educational institution of the higher education "Bashkir state university"*

*YAmshchikova S.L.*

***UDC** 378*

***GRNTI** 14.35.07, 10.00.00*

**1. Functional purpose of a product, scope, its appointment**

The modern period of development of a civilized society characterizes informatization process. One of the priority directions of process of informatization of modern society is education informatization – introduction of means of new information technologies in an education system.

As the main task of educational policy achievement of new, modern quality of education, its compliance to actual and perspective needs of the personality, society and state moves forward.

The electronic course of lectures on discipline "The office right" has theoretical and practical value. With its help it is possible to provide information visually: lecture material that will allow to improve processes of assimilation of knowledge, acquisitions of skills of educational activity; it is effective to exercise control of results of training, repetition; to stir up cognitive activity of trainees; to form and develop certain types of thinking.

The discipline "The office right" is included into variable part of an educational professional cycle of disciplines of the Federal state educational standard of higher education in the direction of preparation "030900.62 Law", to a profile of preparation "State and legal". The knowledge, skills received during studying of discipline have to be used by students comprehensively: at all grade levels in higher education institution; during further training in a magistracy; in the course of the follow-up professional activity at the solution of the tasks demanding application of actual legal information.

The subject matter "The office right" is branch of Russian law, the representing set of the legal norms governing the public relations, arising in the course of passing of public service in public authorities and municipal service in local governments.

Subject of regulation of the Office right are the public relations connected with receipt, passing and the termination of the public and municipal service and also with management of the public and municipal service.

The software product contains all main materials in a subject. Material is stated in the form of lectures on separate subjects of discipline. At the beginning of lecture questions which the student of legal HIGHER EDUCATION INSTITUTIONS and faculties needs to acquire are designated. Thanks to ergonomic design pleasantly and comfortably to work with a course of lectures.

The edition includes the structured material:

1. Title page
2. Explanatory note
3. Rate of lecture material on discipline subjects
4. List of references and regulations

The course of lectures is presented by separate subjects, on the basis of the last changes of the legislation on public service and municipal service: concept and types of public service, revenues to service, certification of employees, cool ranks of the public civil and municipal service and other subjects. The recommended literature and the list of normative legal acts is presented.

Development stages of an electronic course of lectures on discipline "The office right"

1) inspection of object and justification of need of creation of an electronic course of lectures on discipline "The office right"

2) systematization of a training material;

3) creation of the hypertext version of an electronic course of lectures on discipline "The office right" on the basis of the HTML language;

4) studying of the existing analogs of an electronic course of lectures on discipline "The office right";

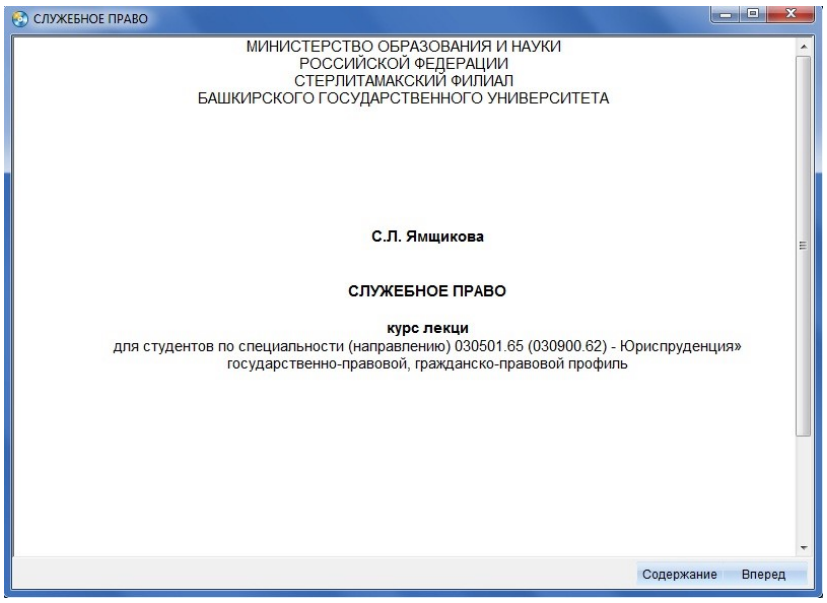
5) creation of objects of interactive virtual demonstration installations, development of design means of computer graphics;

6) development of the ergonomic, comfortable interface of the user, by means of the software of AutoPlay Media Studio 8.0.7.0.

The user interface provides comfortable interaction of the user with the software product. The interface of system is clear and convenient in use, conforms to modern ergonomic requirements.

Screenshots of an electronic course of lectures on discipline "The office right" are given below

1

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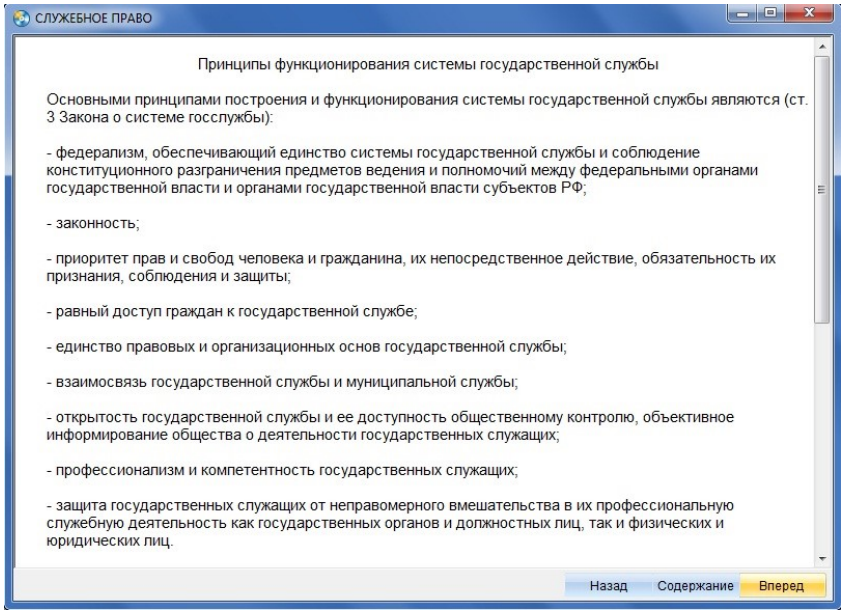


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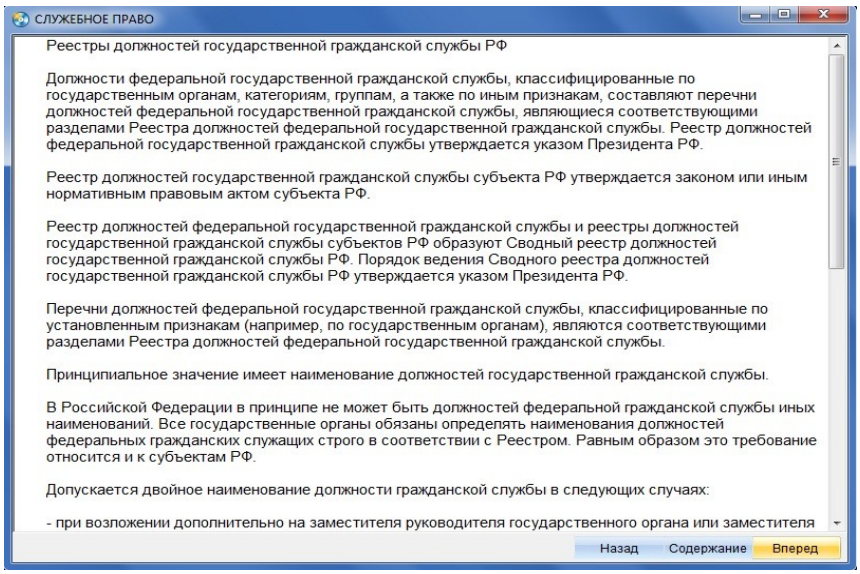



**2. The used technical means**

The electronic course of lectures on discipline "The office right" is created with use of the software of AutoPlay Media Studio of version 8.0.7.0.

Text information is created when using the Microsoft Office package 2007.

The electronic course of lectures on discipline "The office right" can be used both at independent studying of disciplines, and on occupation under the leadership of the teacher when studying material.

The purpose of independent work of students consists in full assimilation of a training material and in development of skills of self-education through work with scientific-theoretical literature and the practical materials necessary for profound studying of the office right, and also development in them of steady abilities to independent (without the assistance of the teacher) to studying, a statement and application of the obtained information.

**3. Special conditions and requirements of organizational, technical and technological character**

Electronic course of lectures on discipline "The office right" belongs to necessary conditions of application of the edition: existence of the Intel Pentium computer above; 20 Mb of free disk space; Windows XP OS above; software of Flash Player of version 8.0 above.

**4. Conditions of transfer of documentation or its sale.**

Condition of transfer of this software product is the contract of purchase and sale signed between the Sterlitamak branch of the Bashkir state university and interested party.

## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic Educational and Methodical Grant " Administrative Responsibility of Legal Entities in the Legal Russian Federation System " (the Direction 030900.62 — Law, a Profile — a Bachelor Degree, a Magistracy)"

*Sterlitamak branch of Federal public budgetary educational institution of the higher education "Bashkir state university"*

*YApryncev E.V.*

***UDC** 378*

***GRNTI** 14.35.07, 10.17.01*

**1. Functional purpose of a product, scope, its appointment**

At all stages of development of modern Russian statehood and civil society, and, therefore, and domestic legal system, there is extremely actual a problem of legal responsibility. The institute of administrative responsibility of legal entities in its modern look appeared in domestic legal system together with the current Code of the Russian Federation on Administrative Offences, that is began to function since July 1, 2002. For this rather small period of time, jurisdiction of institute of administrative responsibility of legal entities steadily extended, having gained so far without exaggeration the defining legal and social and economic value in system of domestic administrative and delictual legal relationship.

Thus, the structure of legislative changes, suitable for the analysis, in this sphere was so far created as rather extensive and informative law-enforcement practice in the sphere of attraction to administrative responsibility of legal entities, and.

As the main task of educational policy achievement of new, modern quality of education, its compliance to actual and perspective needs of the personality, society and state moves forward.

Electronic educational and methodical grants have great practical value. With their help it is possible to provide visually on the screen in various form information that allows: to initiate processes of digestion of material, acquisition of skills of practical activities; to stir up cognitive activity of trainees; to form and develop certain types of thinking.

Electronic educational and methodical grant "Administrative responsibility of legal entities in legal system of the Russian Federation" is intended for independent work of students of the day and correspondence offices which are engaged in profound studying of a course of domestic administrative law and process.

The software product contains all main materials on the chosen subject. Materials are logically structured according to chapters and paragraphs

Thanks to ergonomic design pleasantly and comfortably to work with the Electronic educational and methodical grant.

The electronic educational and methodical grant includes the structured material according to the following sections:

Introduction
Chapter 1
Chapter 2
Chapter 3
Conclusion
The list of the used sources and literature

Chapters are in addition broken into paragraphs.

Development stages of an electronic educational and methodical grant:

1) inspection of object and justification of need of creation of the Electronic educational and methodical grant "Administrative responsibility of legal entities in legal system of the Russian Federation".

2) material systematization;

3) creation of the hypertext version of the electronic monograph on the basis of the HTML language;

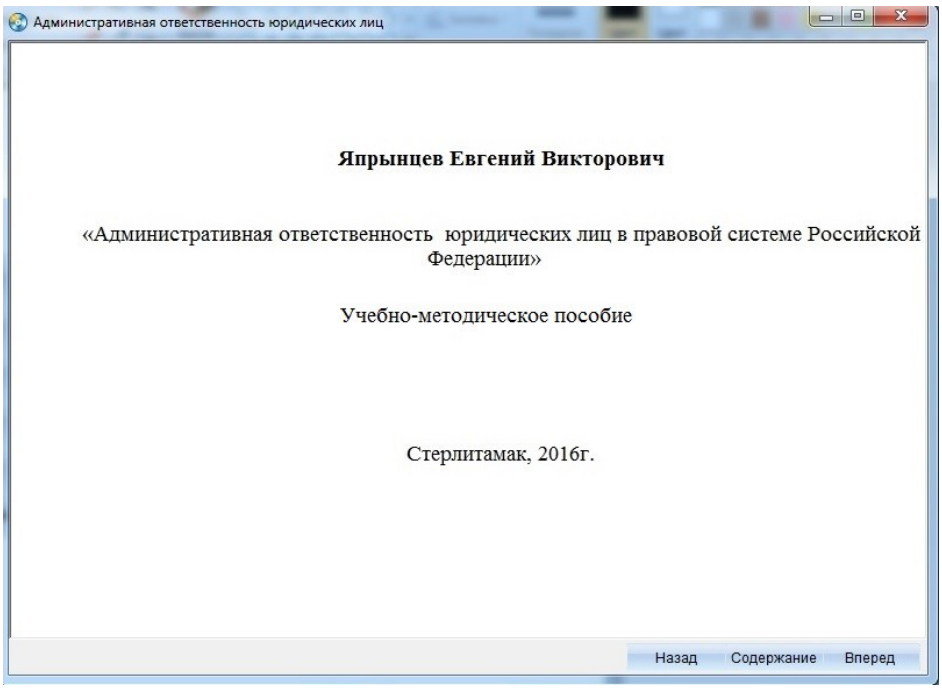
4) studying of the existing analogs;

5) creation of objects of interactive virtual demonstration installations, development of design means of computer graphics;

6) development of the ergonomic, comfortable interface of the user, by means of the software of AutoPlay Media Studio 8.2.0.0.

The user interface provides comfortable interaction of the user with the software product. The interface of system is clear and convenient in use, conforms to modern ergonomic requirements.

Screenshots of the Electronic educational and methodical grant are given below


Административная ответственность юридических лиц
Япрынцев Евгений Викторович
«Административная ответственность юридических лиц в правовой системе Российской Федерации»
Учебно-методическое пособие
Стерлитамак, 2016г.
Назад
Содержание
Вперед

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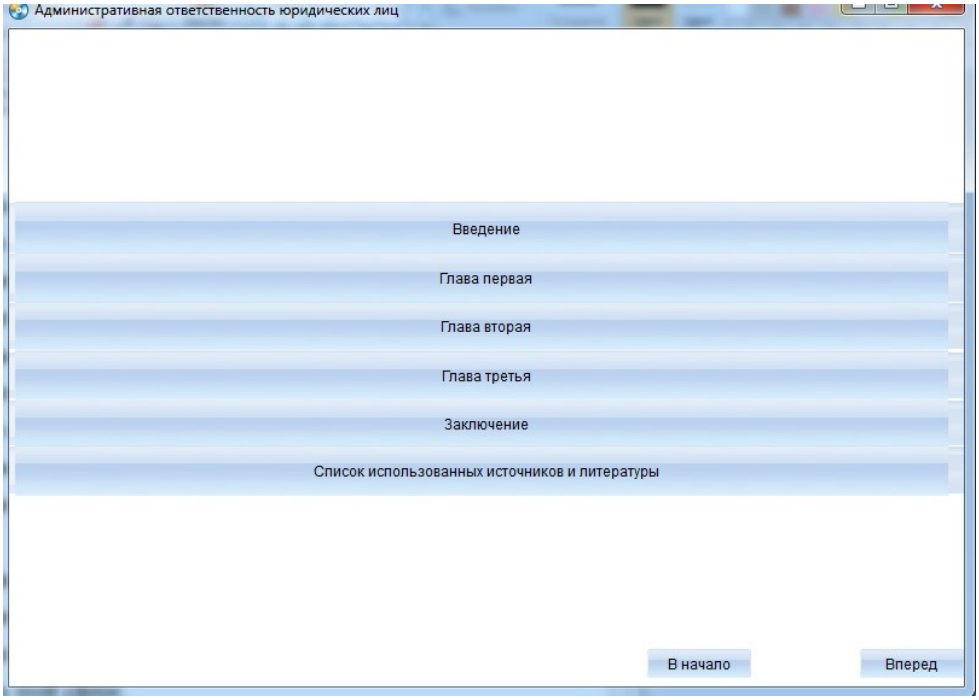
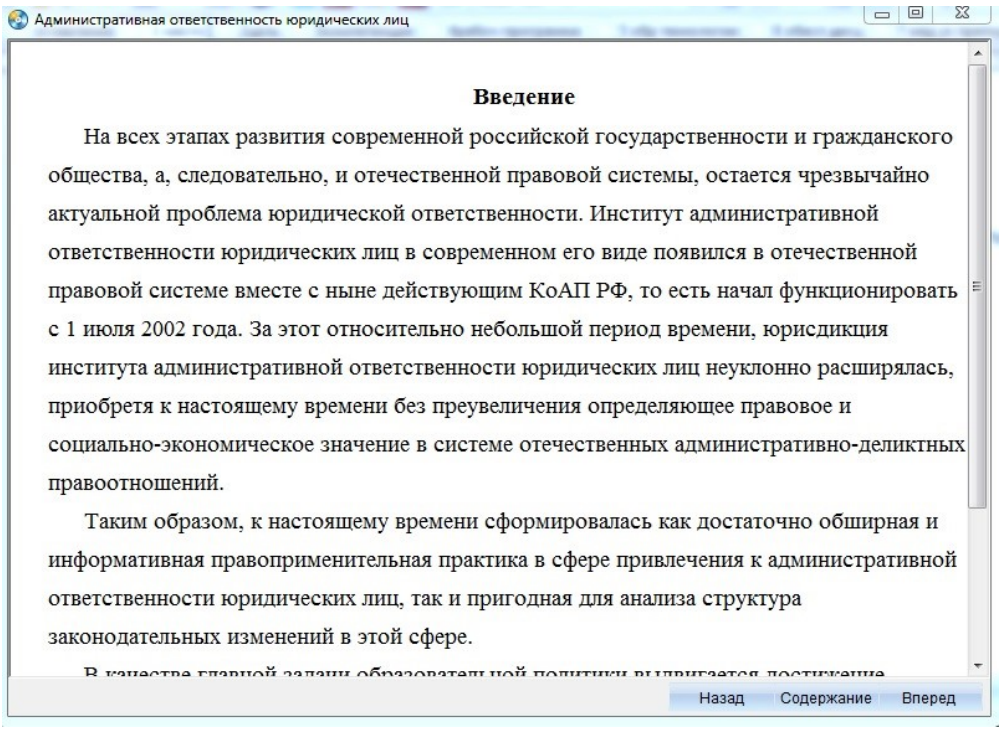

Административная ответственность юридических лиц
Введение
Глава первая
Глава вторая
Глава третья
Заключение
Список использованных источников и литературы
В начало
Вперед

3




**2. The used technical means**

The electronic educational and methodical grant "Administrative responsibility of legal entities in legal system of the Russian Federation" is created with use of the software of AutoPlay Media Studio of version 8.0.7.0.

Text information is created when using the Microsoft Office package 2007.

The electronic educational and methodical grant can be used both at independent studying of disciplines, and on occupation under the leadership of the teacher when studying material.

The purpose of independent work of students consists in full assimilation of a training material and in development of skills of self-education through work with scientific-theoretical literature and practical materials.

**3. Special conditions and requirements of organizational, technical and technological character**

Treats necessary conditions of application of an electronic educational and methodical grant: existence of the Intel Pentium computer above; 20 Mb of free disk space; Windows XP OS above; software of Flash Player of version 8.0 above; software of Adobe Reader 8.0 above.

**4. Conditions of transfer of documentation or its sale.**

Condition of transfer of this software product is the contract of purchase and sale signed between the Sterlitamak branch of the Bashkir state university and interested party.

## ADVERTISING AND TECHNICAL DESCRIPTION "Program module "Analytical Reporting"

*Sterlitamak branch VO Bashkirsky Public Educational Institution state university*
*Kulikova M.A., Nafikov V.R., Nafikova A.R.*

***UDC** 378*
***GRNTI** 14.35.07, 55.03.01*

**1. Functional purpose of a product, area of its application, its appointment**

The choice of a development tool of reports in each case has to be reasonable and dictated by features and complexity of solvable tasks, and also volume of resources and means which can be spent for realization of a subsystem of the reporting. It is necessary to consider, both possibilities of systems, and cost of introduction and support of decisions.

The generator of reports is the independent appendix capable to interact with databases without the assistance of any "intermediaries". The most important feature of modern generators is an opportunity to carry out the independent, independent database management system (DMS) and appendices of the databases (D), data processing, and this processing can sometimes be rather difficult.

The preference was given in our case to the generator of reports FastReport. The important principle of products of FastReport is ensuring universality from the point of view of a format of the processed data, a visual development environment and high speed.

FastReport provides all necessary tools for development of reports, including the visual designer of reports, a kernel of a subsystem of reports and a window of preview.

Thus, FastReport – the qualitative product meeting all requirements imposed to modern generators of reports.

This program module is developed in the environment of visual programming of Borland Delphi 7. For development of the reporting in the environment of visual programming of Delphi the generator of reports FastReport is used. The reports created by means of this generator comprise valuable information which gives the chance to the head of the organization to establish more accurate purposes and tasks in the management sphere. The program module is intended for introduction in the existing software of VerMediko of the medical center LLC Hippocrates.

For work with the reporting in MySQL DBMS the database consisting of two tables which define type of the report and additional components on a form, necessary during the work (fig. 1) with it is created.

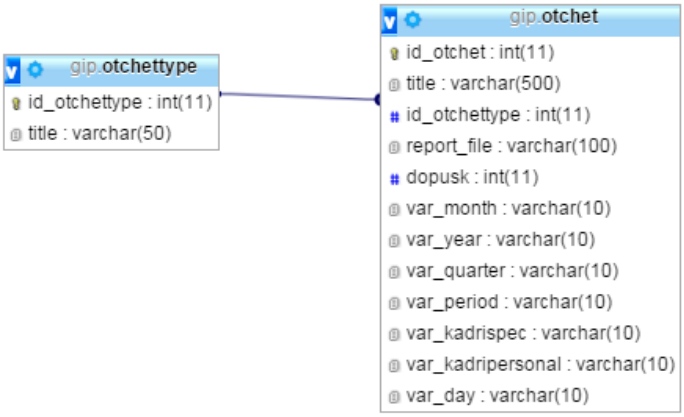



Fig. 1. Communication of tables of the reporting

For creation of the report in the environment of Delphi by means of the FastReport generator it is necessary to execute the following algorithm:

1) to create SQL request for selection of necessary information;

2) to transfer the components which are responsible for display of data in the report to a form;

3) to issue a report template for more convenient display of data;

4) to start the application for viewing of the report.

According to this algorithm, it is possible to create reports of any complexity.

Let's review an example of the report constructed by means of the FastReport generator which will make a conclusion of data on the number of patients to each doctor for a certain month.

For a start it is necessary to create SQL inquiry which will take information, actual for us, from the database.

SELECT kadripersonal.FIO, Count (Distinct kassa.id_client) as Kolvo;
FROM kassa;
INNER JOIN kadripersonal on kadripersonal.id_kadripersonal=kassa.id_kadripersonalvrach;
WHERE (MONTH(kassa.day)= '+month+') and (YEAR(kassa.day)= '+year+');
GROUP BY kadripersonal.FIO;

The following stage is installation of components with which creation of reports begins. We place on a form the frxReport components, intended for creation of the report, and frxDBDataset serving for connection to components of the database (fig. 2).

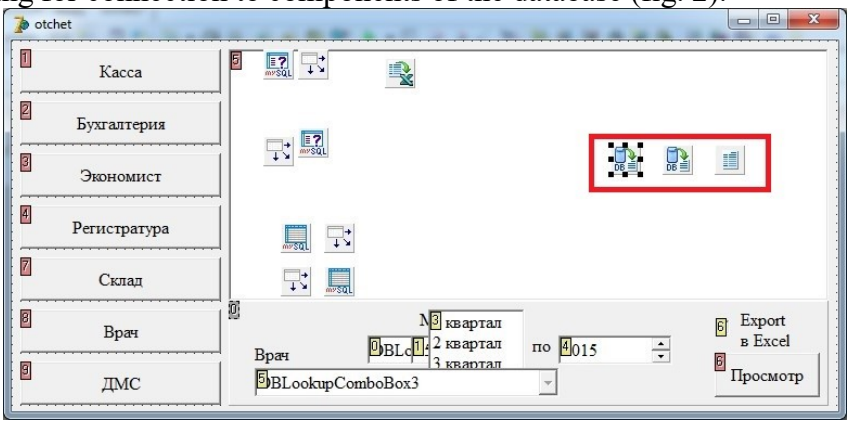



Fig. 2. FastReport components

We pass with double click of a mouse on the frxReport component to the designer of the report which appearance is given in fig. 3.

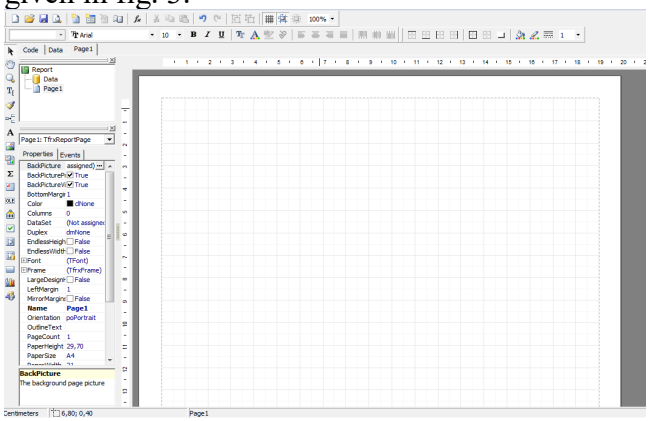


Fig. 3. An empty template of the report in FastReport

The designer provides to the user convenient means for development of appearance of the report and allows to execute preview at once. The interface of the designer is executed at the modern level with use of toolbars which arrangement can be changed to the taste.

At this stage it is necessary to issue the report according to requirements of the organization. In our case the report will be presented in the table form. At the beginning of the report company details which are made out in the form of variables will be specified and are described in a program code.

Further we will establish all necessary variables in "cap" of the report and we will pass to registration of bands. "Bands" in FastReport are understood as logically related group of elements of the report (for example, "report heading", "page heading", "data" etc.). In this case we will place the following bands in the working field of the designer: the heading of the report (ReportTitle), heading of these (MasterHeader) given the first level (MasterData) which are removed, according to inquiry conditions, and the cellar of data (MasterFooter) – the section in which the total number of patients will be displayed (by application of the modular Sum function).

As a result, the template of the report takes the following form (fig. 4).

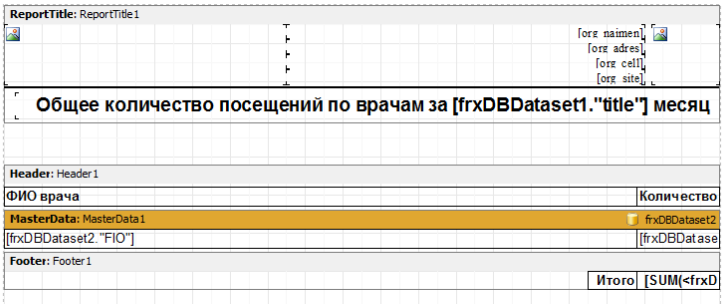



Fig. 4. The filled report template in FastReport

Now we pass to the final stage of creation of the report. For this purpose we will start the application and we will check correctness of display of the report created by us. The result is presented in fig. 5.

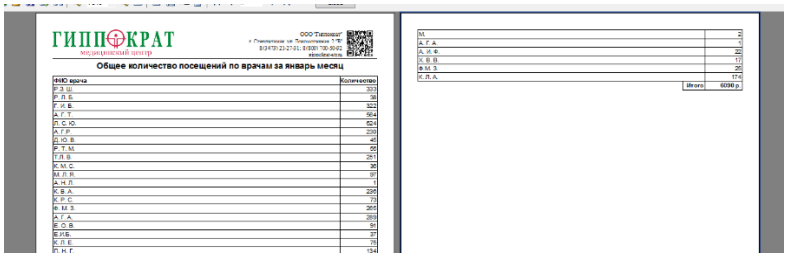



Fig. 5. Result of a conclusion of the report

According to the existing federal law "About information, information technologies and information security" transfer of confidential information to the third parties without consent of her owner is forbidden. For this purpose all data having confidential character were protected by use of pseudonyms, change of personal data on patients and personnel.

Thus, use of rather simple algorithm allows to construct reports of any complexity that, in turn, gives a big scope for actions of administrative personnel of the company, in particular, of the medical center LLC Hippocrates. On the basis of this algorithm other reports conforming to requirements of the medical center are created.

**2. The used technical means**

The program module is developed in the environment of visual programming of Borland Delphi 7. The database is designed in the MySQL database management system. Reports are created by means of the FastReport generator.

**3. Special conditions and requirements of organizational, technical and technological character**

The program module functions in an operational environment of Windows*. Extends on any carrier.

**4. Conditions of transfer of documentation or its sale**

This software product can be transferred or sold to any natural or legal entity on the basis of the mutual arrangement with developers. Interested persons for obtaining more detailed information can send the inquiries to the address:

E-mail: albinabikbaeva@gmail.com

## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic resource "Radical Processes in Technology of Polymers"

*Volga polytechnical institute (branch) of federal public budgetary educational institution of the higher education "Volgograd state technical university"*

*Spiridonova M.P., Novopol'ceva O.M., Puchkov A.F., Kablov V.F.*

***UDC** 378*

***GRNTI** 14.35.07, 55.09.39, 61.57.01*

**1. Functional purpose of a product, area of its application, its appointment**

The electronic resource "Radical Processes in Technology of Polymers" is the manual and contains electronic and text data (1 file: 363 KB).

The electronic manual is developed according to requirements of Federal state standard of higher education and intended for the students of a magistracy who are trained in the Chemical Technology direction. A scope of this electronic resource is educational process at the Volga polytechnical institute (branch) of the Volgograd technical university, any students of the Chemical Technology direction can act as object of training. The electronic manual is recognized to provide interaction of the student with the training material offered by the teacher, allowing to work as independently, and in audience by means of the last.

МИНОБРНАУКИ РОССИИ
Федеральное государственное бюджетное образовательное учреждение высшего образования
«Волгоградский государственный технический университет»
ВОЛЖСКИЙ
ПОЛИТЕХНИЧЕСКИЙ ИНСТИТУТ
(филиал)
Федерального государственного бюджетного образовательного учреждения высшего образования
«Волгоградский государственный технический университет»
(ВПИ (филиал) ВолгГТУ)

**Электронная библиотека студента** **На главную**

УДК 678.4:629.11.012.5

Рецензенты:
ООО «Химполимер», директор Акуленко П.Е.
ООО «Эластохим», зам. директора Юшкина С.М.

**О диске**

Издается по решению редакционно-издательского совета Волгоградского государственного технического университета

Все права на размножение и распространение в любой форме остаются за разработчиком.

Нелегальное копирование и использование данного продукта запрещено.

Спиридонова, М.П., **Радикальные процессы в технологии полимеров** [Электронный ресурс]: учебное пособие / М.П. Спиридонова, О.М. Новопольцева, А.Ф. Пучков, В.Ф. Каблов // Электрон. текстовые дан.(1 файл: 363 КБ) – Волжский: ВПИ (филиал) ВолгГТУ, 2016 г. – Систем. требования: Windows 95 и выше; ПК с процессором 486+;CD-ROM. – свид. о регистрации №

Учебное пособие содержит теоретический материал о радикальных процессах, развивающиеся при переработке и эксплуатации полимерных материалов. В пособии представлены актуальные вопросы в области защиты полимеров от радикальных процессов разрушения.
Предназначено для студентов магистратуры высших учебных заведений, обучающихся по направлению подготовки «Химическая технология» по дисциплине «Радикальные процессы в технологии полимеров» и может быть использовано для студентов бакалавриата направления «Химическая технология» при освоении дисциплин «Технология переработки полимеров», «Теоретические основы переработки эластомеров», «Общая технология полимерных материалов», «Рецептуростроение полимерных материалов».

**Ключевые слова:** образование в техническом вузе, учебные пособия, радикальные процессы, старение эластомерных материалов, противостарители

**Зарегистрирован** в ОФЕРНиО (Объединенный Фонд Электронных Ресурсов "Наука и Образование") (www.ofernio.ru)

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ул. Энгельса 42а
Тел.: (8443) 25-46-79, 39-82-92
E-mail: library@volpi.ru
http://www.volpi.ru

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The electronic resource "Radical Processes in Technology of Polymers" is the main training material on discipline "Radical processes in technology of polymers".

In an electronic grant the main actual problems are given in area creation of obstacles of course of freely radical processes in polymers on which solution not only the possibility of the description of mechanical properties of materials, but also new approaches to increase in term of operation depends. Also in it the course of performance of laboratory works and a subject of a practical training on the presented discipline is described.

In modern conditions the importance gets research of the radical processes developing during the processing and operation of polymers. Research of methods of suppression of radical processes of aging for the purpose of increase in terms of operation.

The real electronic grant aims - formation at the undergraduate of necessary knowledge in the field of polymeric technologies, acquaintance with methods of researches and their use in practical activities, at disclosure of essence of contents of terms and concepts of polymeric technology, with the subsequent application of the gained knowledge in practice. The main objectives of the manual are: the help to students in studying of the processes leading to aging of polymeric materials and methods of their prevention.

The electronic resource "Radical Processes in Technology of Polymers" helps students of the Chemical Technology profile with studying of theoretical bases of modern polymeric technologies, with development of skills of work with the modern equipment.

The electronic resource "Radical Processes in Technology of Polymers" allows, using the gained knowledge in practice, to make the domestic polymeric industry competitive.

**2. The used technical means**

The electronic resource "Radical Processes in Technology of Polymers" was created with use of language of a hypertext marking of HTML and does not demand additional installation.

The technical means used during creation of the electronic edition it is the computer with Windows XP OS, the software of MS Word and the visual HTMLReader HTML editor of version 2.5.

**3. Special conditions and requirements of organizational, technical and technological character**

Treats necessary conditions of use of the electronic edition - existence of the personal computer with the processor 486+, Windows 95 OS above with the software Web Browser (Firefox, Opera, IE, etc.), CD ROM. The browser of PDF of documents is necessary for viewing of electronic resources.

**4. Conditions of transfer of documentation or its sale**

All rights for reproduction and distribution in any form remain for the developer.

Illegal copying and use of this product is forbidden.

On all questions it is necessary to address to the Volga polytechnical institute (branch) of VOLGGTU

Address: Russia, 404121, Volgograd Region. Volzhsky, st. of Engels, 42a

Phone: 8 (8443) 254679

Email: library@volpi.ru

## ADVERTISING AND TECHNICAL DESCRIPTION "The Electronic Educational and Methodical Complex "Development of Tourist Routes and Programs" (the Direction 43.04.02 — "Tourism", a Profile — a Magistracy)"

*FGBOOU WAUGH "The Nizhny Novgorod state pedagogical university of Kozma Minin"*

*Lebedeva T.E., Egorov E.E.*

***UDC** 378*

***GRNTI** 14.35.07, 71.37.75, 06.71.57*

**1. Functional purpose, scope, its restrictions**

The electronic educational and methodical complex on discipline "Development of tourist routes and programs" is intended for the organization and ensuring contact and independent work of the undergraduates of part-time courses who are trained in the direction of preparation 43.04.02 "Tourism" and covers the main questions connected with development of tourist routes and programs. In training about application of EUMK active methods, including a method of the advancing independent work are used at the organization of classroom practical work, a large number of audio-video lectures, actual Internet materials.

The complex is presented in system of electronic training "Moodle" (see fig. 1) to which access is possible after authorization through the official site of Mininsky university according to the reference http://moodle.mininuniver.ru/course/view.php?id=659. EUMK is created with use of tools of the program Moodle environment which has a wide range of opportunities for creation and placement in on a rate of various electronic educational and methodical materials, and also interactive systems of testing. Connection of external references to resources of the Internet allows to expand the educational environment due to attraction of additional sources of information. The system provides also interactive interaction between participants of educational

process, and also carrying out different types of control of progress. In the developed complex the logic of studying of discipline is accurately built, the emphasis is placed on the practical tasks allowing to reveal the level of formation of the main competences. The course is illustrated with necessary examples and concrete materials, the theory is submitted as additional material since the course is developed for undergraduates.

The developed "Development of Tourist Routes and Programs" complex is presented by practical tasks and theoretical support in quality of additional material. Each practical task aims, tasks, the achieved educational results. The technique of performance of tasks has step-by-step instructions for their performance and criteria for evaluation of activity of the student. Students are provided with the set of electronic theoretical, training and reference materials, methodical instructions, instructions for performance of different types of work provided it is aware.

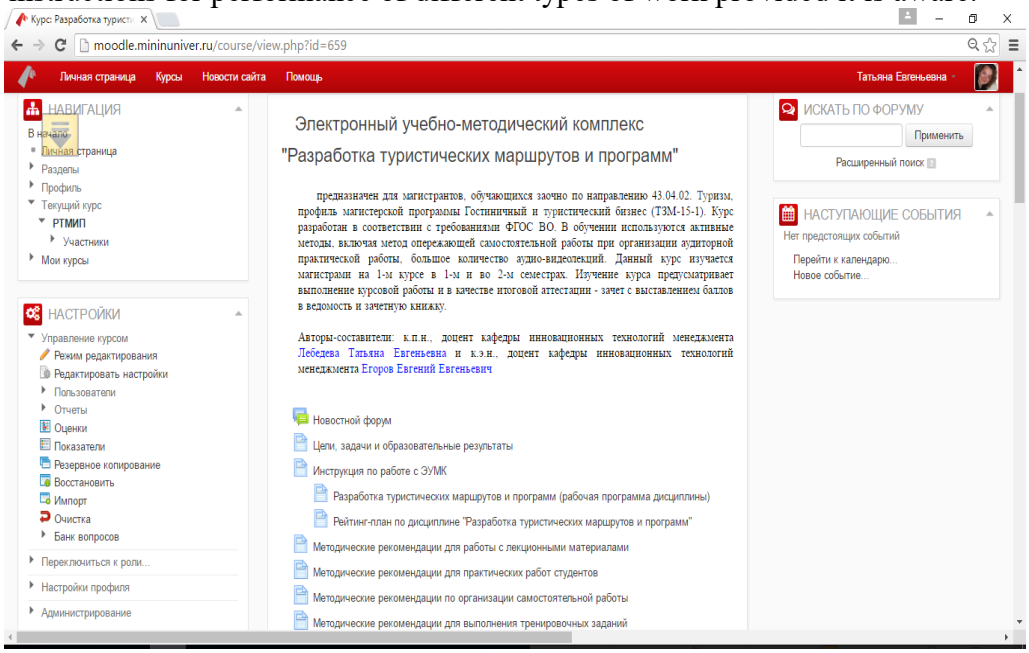



Figure 1 - Main page of the electronic educational and methodical complex "Development of Tourist Routes and Programs"

When developing the electronic educational and methodical complex "Development of Tourist Routes and Programs" the basic principle of training of students in the mode of remote interaction with the tutor (teacher) – the most complete and evident idea of a training material providing them independent studying at individual speed and also creation of enough the internal and external relations allowing to organize effective and fast access for the trainee to necessary information is considered.

**2. Structure and conditions of application**

The electronic educational and methodical complex "Development of Tourist Routes and Programs" has the following structure:

Introduction module (news forum; purposes, tasks and educational results; instruction for work of EUMK; working program of discipline; rating plan of the undergraduate; methodical recommendations for work with lecture materials, practical tasks, about the organization of independent work, performance of training tasks, test tasks), presented in figure 1.

Development of the tourist industry of Russia in modern conditions.

Technology of development of routes and formation of rounds.

Organization and technology of work with partners.

Organization and technology of work with the client.

Materials for certification of undergraduates (the training test for preparation for offset, questions to offset, criteria for evaluation of the undergraduate on offset, the test of total control)

Directory materials

The reflexive section (poll of students on quality of EUMK, the questionnaire quality of distance learning).

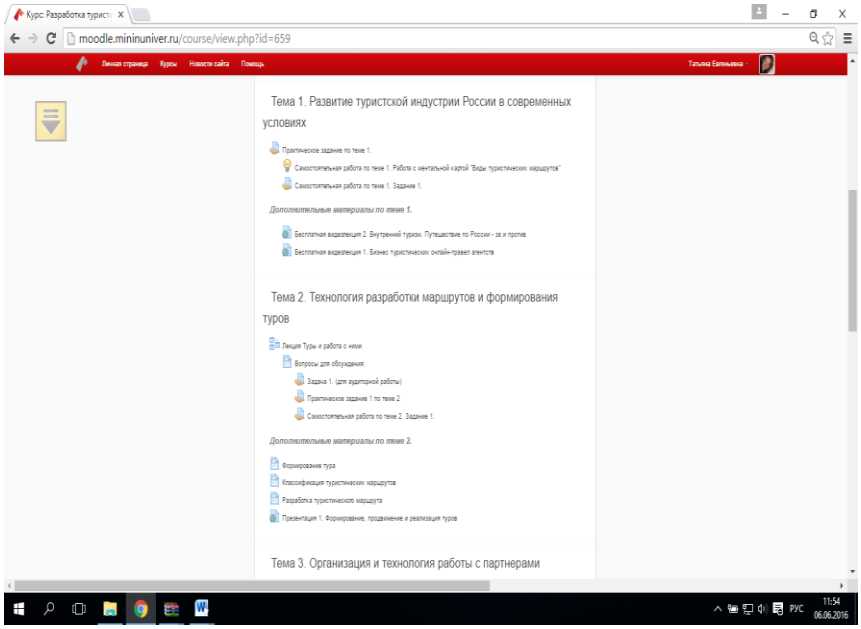



Figure 2 Screenshot of the Page of a Complex (maintenance of a subject 1-2)

Information resources and interactive elements – theoretical materials, lectures, the presentations for lectures, practical tasks and tasks, methodical maintenance of performance of practical tasks, tests, references to resources of the Internet (fig. 2) are a part of each module.

Training of undergraduates correspondence students is impossible without effective feedback between students the teacher. Within the developed course ensuring such communication is carried out by means of the interactive elements "Chat", "Forum". At the same time there are possible a carrying out individual consultations, communication in a chat mode and the forum mode when each participant of a course can speak on any question of the offered subject.

The electronic educational and methodical complex "Development of Tourist Routes and Programs" is approved in educational process of NGPU of K. Minin in the direction of preparation 43.04.02 "Tourism", a profile of the master program "Hotel and Travel Business". The complex can be used for support of training of students of internal and correspondence forms of education.

**3. The used technical means**

Requirements to the personal computer of the user for work with a course are presented in the table.

| | Office | |
|---|---|---|
| | At least | Optimum |
| Case (power supply unit) | Microtower of 350 W | Microtower of 350 W |
| Maternal payment (chipset) | Intel H81 | Intel H81 |
| CCP | Intel Pentium Dual-Core G3220 | Intel Pentium Dual-Core G3220 |
| RAM | MB DIMM, DDR3 4096 1333 MHz | MB DIMM, DDR3 4096 1333 MHz |
| Hard drive (HDD) | 500 GB | 500 GB |

| | | |
|---|---|---|
| Network, audio- and graphic (video) of a payment | integrated | integrated |

During creation of EUMK the tools of system of electronic training Moodle were used. Separate materials of a course are prepared with application of the programs MS Office, Adobe Reader, Power Point.

Work with a course requires existence of connection of the computer of the user to the Internet and access to the server of system of distance learning of higher education institution on which this course is placed. For work with a course it is recommended to use the Mozilla Firefox browser as when using other browsers correct work of the website of distance learning is not guaranteed.

**4. Conditions of transfer and sale of program documentation**

Information resources of a complex can be studied directly on the computer, or to keep on the local computer for the press and further acquaintance. Interactive elements (tasks of various types, glossaries, forums, tests) allow to focus attention of students on separate fragments of the studied material, to check the level of knowledge, to organize interaction of listeners with each other and with the teacher.

EUMK is not a commercial product and is provided to students and teachers of NGPU of K. Minin free of charge. The course can be transferred to the interested person or the organization on the basis of the contract according to the current legislation. Concerning acquisition it is possible to address in FGBOU VPO "The Nizhny Novgorod state pedagogical university of Kozma Minin".

Address: 603950, Nizhny Novgorod, Ulyanov St., 1
Phone: 8(831) 419 70 08
E-mail: e.learning.minun@gmail.com

## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic resource "Course of Lectures " Modern Technologies of Management " for Discipline " Modern Technologies of Management " for Students of All Forms of Education of the Management Direction 38.03.02 the Financial Management Profile"

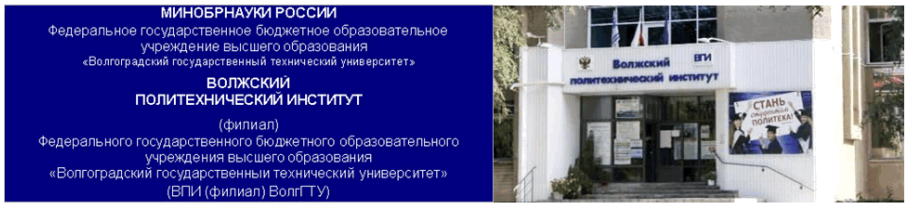
*Volga polytechnical institute (branch) of federal public budgetary educational institution of the higher education "Volgograd state technical university"*

*Luk'yanov G.I., Filippova T.A.*

***UDC 378***
***GRNTI 14.35.07, 06.35.51, 06.35.35***

**1. Functional purpose of a product, area of its application, its appointment**

The electronic resource "Course of lectures" modern technologies of management" on discipline "Modern technologies of management" for students of all forms of education of the Management direction 38.03.02 the Financial Management profile is the manual and contains electronic and text data (1 file: 1.4 Mb).




Электронный ресурс

**Лукьянов Г.И., Филиппова Т.А.**

## Курс лекций «Современные технологии управления»

**по дисциплине «Современные технологии управления» для студентов всех форм обучения направления 38.03.02 «Менеджмент» профиль «Финансовый менеджмент»**

**Волжский**

**2016**

The electronic manual is developed according to requirements of Federal state standard of higher education and intended for the students of a bachelor degree who are trained in the Management direction 38.03.02 the Financial Management profile.

Scope of this electronic resource is educational process at the Volga polytechnical institute (branch) of the Volgograd technical university, students of the direction of different forms of education stated above can act as object of training.

The electronic manual is urged to provide interaction of the student with the training material offered by the teacher, allowing to work as independently, and in audience by means of the last.

МИНОБРНАУКИ РОССИИ
Федеральное государственное бюджетное образовательное учреждение высшего образования
«Волгоградский государственный технический университет»
ВОЛЖСКИЙ ПОЛИТЕХНИЧЕСКИЙ ИНСТИТУТ
(филиал)
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(ВПИ (филиал) ВолгГТУ)

Электронная библиотека студента На главную

УДК 338.24 (075.8)

Рецензенты:
Доктор экономических наук, доцент кафедры менеджмента МБОУ ВПО «Волжский институт экономики, педагогики и права» А.А. Вакарев
Кандидат экономических наук, доцент кафедры «Государственное и муниципальное управление» Российская академия народного хозяйства и государственной службы при Правительстве РФ М.С. Невская

**О диске**

Издается по решению редакционно-издательского совета Волгоградского государственного технического университета

Все права на размножение и распространение в любой форме остаются за разработчиком.

Нелегальное копирование и использование данного продукта запрещено.

Филиппова, Т.А. **Курс лекций «Современные технологии управления» по дисциплине «Современные технологии управления» для студентов всех форм обучения направления 38.03.02 «Менеджмент» профиль «Финансовый менеджмент»** [Электронный ресурс]: учебное пособие / Т.А. Филиппова, Г.И. Лукьянов // Электрон. текстовые дан. (1 файл: 1,4 МБ) – Волжский: ВПИ (филиал) ВолгГТУ, 2016 г. – Систем. требования: Windows 95 и выше; ПК с процессором 486+; CD-ROM. – свид.о регистрации №

Содержит сведения о сущности и характерных чертах современного менеджмента в новой экономике в крупных зарубежных странах и России, о современных тенденциях в системе управления, о существующих одномерных и многомерных стилях управления, о зависимости стиля управления от личностных качеств менеджера-лидера и др.
Пособие рассчитано на студентов всех форм обучения направления 38.03.02 «Менеджмент» профиль « Финансовый менеджмент».

**Ключевые слова**: менеджмент, персонал, стили управления

**Зарегистрирован** в ОФЕРНиО (Объединенный Фонд Электронных Ресурсов "Наука и Образование") (www.ofernio.ru)

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Тел.: (8443) 22-19-56, 39-82-92
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The electronic resource "Course of lectures" modern technologies of management" is the main training material on discipline "Modern technologies of management".

The main materials on studying of the given discipline according to the working program are grouped and given in an electronic grant.

Studying of the latest features of management of firm has paramount value in Russia, in the conditions of the market economy which is more and more finding real contours. Development of the market concept of managing happens at us in the country taking into account a set of difficulties which are specific to a current state of the Russian economy.

Therefore studying and introduction at the domestic enterprises presented in this manual of characteristic features of modern management in foreign and domestic economy will allow to make their work more successful and effective.

The real electronic grant aims - formation at the bachelor of necessary knowledge of essence and characteristic features of modern management in new economy in large foreign countries and Russia, about current trends in a control system, about the existing one-dimensional and multidimensional management styles, about dependence of management style on personal qualities of the leading manager, etc., and their use in practical activities, disclosure of economic essence of contents of basic terms and concepts, with the subsequent application of the gained knowledge in practice.

The main objectives of the manual are: help to students in studying of methods of the administrative analysis such as: The STEP analysis of firm, DRETS analysis, SWOT analysis, determination of strategic capacity of firm, the McKincey system, "a chain of values" of Porter, etc., a possibility of their application in practical activities of the enterprise, and also determination of economic efficiency from introduction at the enterprises of these recommendations.

The electronic resource "Course of lectures" modern technologies of management" helps students with studying of the structured, system and synergetic approaches in management, the modern principles of formation and a tendency of development of the theory of management (a program goals management, reengineering, creative management, gender management and modular management).

The electronic resource "Course of lectures" modern technologies of management" allows, using the gained knowledge in practice, to make the enterprise of our city or area more successful, effective and competitive both on internal, and in the international market.

**2. The used technical means**

The electronic resource "Course of lectures" modern technologies of management" on discipline "Modern technologies of management" for students of all forms of education of the Management direction 38.03.02 the Financial Management profile is created with use of language of a hypertext marking of HTML and does not demand additional installation.

The technical means used during creation of the electronic edition it is the computer with Windows XP OS, the software of MS Word and the visual HTML Reader HTML editor of version 2.5.

**3. Special conditions and requirements of organizational, technical and technological character**

Treats necessary conditions of use of the electronic edition - existence of the personal computer with the processor 486+, Windows 95 OS above with the software Web Browser (Firefox, Opera, IE, etc.), CD ROM. The browser of PDF of documents is necessary for viewing of electronic resources.

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Phone: 8 (8443) 221956

Email: library@volpi.ru

## ADVERTISING AND TECHNICAL DESCRIPTION "Course of lectures" of the basis of the economy and production management of the enterprise" for the direction 18.03.01 "Chemical technology" of a preparation profile "Technology and processing of polymers"

*Volga polytechnical institute (branch) of federal public budgetary educational institution of the higher education "Volgograd state technical university"*

*Luk'yanov G.I., Filippova T.A.*

***UDC** 378*

***GRNTI** 14.35.07, 06.71.03, 06.71.05*

**1. Functional purpose of a product, area of its application, its appointment**

Electronic resource "Course of lectures" of the basis of the economy and production management of the enterprise" on discipline "The bases of the economy and production managements" for students of all forms of education of the direction 18.03.01 "Chemical technology" a preparation profile: "The technology and processing of polymers" is the manual and contains electronic and text data (1 file: 944 CBs).

МИНОБРНАУКИ РОССИИ
Федеральное государственное бюджетное образовательное учреждение высшего образования
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Электронная библиотека студента | О диске

Электронный ресурс

Лукьянов Г.И., Филиппова Т.А.

Курс лекций «Основы экономики и управления производством предприятия»

по дисциплине «Основы экономики и управления производством» для студентов всех форм обучения направления 18.03.01 «Химическая технология» профиль подготовки: «Технология и переработка полимеров»

Волжский

2016

The electronic manual is developed according to requirements of Federal state standard of higher education and intended for the students of a bachelor degree who are trained in the Chemical Technology direction a preparation profile: "Technology and processing of polymers".

Scope of this electronic resource is educational process at the Volga polytechnical institute (branch) of the Volgograd technical university, students of the direction of different forms of education stated above can act as object of training.

The electronic manual is urged to provide interaction of the student with the training material offered by the teacher, allowing to work as independently, and in audience by means of the last.

МИНОБРНАУКИ РОССИИ
Федеральное государственное бюджетное образовательное учреждение высшего образования
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«Волгоградский государственный технический университет»
(ВПИ (филиал) ВолгГТУ)

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УДК 338.45

Рецензенты:
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Кандидат экономических наук, доцент кафедры «Государственное и муниципальное управление» Российская академия народного хозяйства и государственной службы при Правительстве РФ М.С. Невская

О диске

Издается по решению редакционно-издательского совета Волгоградского государственного технического университета

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Нелегальное копирование и использование данного продукта запрещено.

Филиппова, Т.А. **Курс лекций «Основы экономики и управления производством предприятия» по дисциплине «Основы экономики и управления производством» для студентов всех форм обучения направления 18.03.01 «Химическая технология» профиль подготовки: «Технология и переработка полимеров»** [Электронный ресурс]: учебное пособие / Т.А. Филиппова, Г.И. Лукьянов // Электрон. текстовые дан. (1 файл: 944 КБ) – Волжский: ВПИ (филиал) ВолгГТУ, 2016 г. – Систем. требования: Windows 95 и выше; ПК с процессором 486+; CD-ROM. – свид.о регистрации №

В учебном пособии сформулированы экономические основы производства и ресурсов предприятий, рассмотрены сущность и виды основных производственных фондов, оборотных средств предприятия, а также полно представлены сущность, состав, структура персонала предприятия, учет кадров, кадровая политика, формы и системы оплаты труда, компенсирующие и стимулирующие надбавки и доплаты, мотивирующая роль, а также представлен технико-экономический анализ инженерных решений и др.
Пособие рассчитано на студентов всех форм обучения направления 18.03.01 «Химическая технология» профиль «Технология и переработка полимеров».

**Ключевые слова:** экономика, управление производством, персонал, кадровая политика, оплата труда

**Зарегистрирован** в ОФЕРНиО (Объединенный Фонд Электронных Ресурсов "Наука и Образование") (www.ofernio.ru)

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http://www.volpi.ru

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The electronic resource "Course of lectures" of the basis of the economy and production management of the enterprise" is the main training material on discipline "The bases of the economy and production managements".

The main materials on studying of the given discipline according to the working program are grouped and given in an electronic grant.

In modern conditions studying of actions for management of processes of creation, development and production of new equipment and goods for the purpose of increase of economic efficiency of the enterprises, and also creations of the market relations between the production organizations and consumers is of particular importance.

The considered modern approaches to the economic processes and the phenomena occurring now in domestic market economy allow to make work of the enterprises more effective.

The real electronic grant aims - formation at the bachelor of necessary knowledge of the general representations and the principles of economic processes, production management, personnel policy and management of personnel and its payment, at acquaintance with the existing methods and systems, and their use in practical activities, disclosure of economic essence of contents of basic terms and concepts, with the subsequent application of the gained knowledge in practice.

The main objectives of the manual are: the help to students in studying of essence of economy, production management, the existing ways of implementation of the measures directed to widespread introduction of effective methods of management of production and personnel, systems of compensation; and also determination of economic efficiency from introduction at the enterprises of these recommendations.

The electronic resource "Course of lectures" of the basis of the economy and production management of the enterprise" helps students of not economic direction with studying of theoretical bases of modern economic knowledge, knowledge of production management and personnel of the enterprise.

The electronic resource "Course of lectures" of the basis of the economy and production management of the enterprise" allows, using the gained knowledge in practice, to make the enterprise of our city or area more successful, effective and competitive both on internal, and in the international market.

**2. The used technical means**

The electronic resource "Course of lectures" modern technologies of management" on discipline "Modern technologies of management" for students of all forms of education of the Management direction 38.03.02 the Financial Management profile is created with use of language of a hypertext marking of HTML and does not demand additional installation.

The technical means used during creation of the electronic edition it is the computer with Windows XP OS, the software of MS Word and the visual HTMLReader HTML editor of version 2.5.

**3. Special conditions and requirements of organizational, technical and technological character**

Treats necessary conditions of use of the electronic edition - existence of the personal computer with the processor 486+, Windows 95 OS above with the software Web Browser (Firefox, Opera, IE, etc.), CD ROM. The browser of PDF of documents is necessary for viewing of electronic resources.

**4. Conditions of transfer of documentation or its sale**

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On all questions it is necessary to address to the Volga polytechnical institute (branch) of VOLGGTU

Address: Russia, 404121, Volgograd Region. Volzhsky, st. of Engels, 42a

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Email: library@volpi.ru

## ADVERTISING AND TECHNICAL DESCRIPTION "Remote course "Probability Theory and Mathematical Statistics": an electronic educational and methodical complex for students of the economic directions, trained in the direction of preparation 38.03.01 - Economy"

*Federal public budgetary educational institution of the higher education "Magnitogorsk state technical university of G. I. Nosov"*

***Bulycheva S. V.***

***UDC*** *378.02:37.016*

***GRNTI*** *14.35.09, 27.43.15, 27.43.17*

**1. Functional purpose of development, area of its application, its restriction**

This development is intended for ensuring educational process of students – correspondence students of the direction of preparation 38.03.01 – Economy, trained remotely, on discipline "Probability theory and mathematical statistics". This course is supposed to be studied students independently during one semester.

In the electronic educational and methodical complex (EEMC) on discipline "The probability theory and mathematical statistics" according to the federal state educational standard are stated the main modern knowledge of this subject, the basic concepts, theoretical and practical aspects of application of probability theory and mathematical statistics in research of the casual phenomena and processes are opened.

The course "Probability Theory and Mathematical Statistics" one of fundamental courses giving concept of regularities to which the mass casual phenomena and scientific idea of statistical methods of research of the casual phenomena in economy submit. Therefore the purpose of studying of this discipline is acquaintance of students with the main mathematical methods and models of research of probabilistic regularities of mass uniform casual events.

First of all, this concept of a casual event and probability of its approach, a random variable (discrete or continuous) and, connected with these concepts, integrated and differential function of distribution of probabilities. The student has to understand sense of the main characteristics of distribution of random variables, be able to find them and to interpret the received results. Besides, in the offered course methods of an assessment of dependence of random variables are considered that is extremely important when studying economic events.

The course "Probability Theory and Mathematical Statistics" is basic for studying of discipline of "Econometrician" and further is necessary for studying of econometric methods and methods of economic-mathematical modeling.

Process of studying of discipline is directed to formation of competences, as a result the student:

– owns culture of thinking, it is capable to generalization, the analysis, perception of information, statement of the purpose and the choice of ways of its achievement (OK-1);

– it is capable to self-development, increase of the qualification and skill (OK-5);

– it is capable to choose tools for processing of economic data according to an objective, to analyse results of calculations and to prove the received conclusions (PK-5);

– it is capable to build on the basis of the description of economic processes and the phenomena standard theoretical and econometric models, to analyze and to substantially interpret the received results (PK-6).

As a result of development of discipline trained has to:

to know the fundamentals of probability theory and mathematical statistics necessary for the solution of economic tasks;

to be able to apply methods of mathematical modeling, a theoretical and pilot study to the solution of economic tasks;

to own skills of use of modern mathematical tools for the solution of economic tasks; a technique of construction, the analysis and application of mathematical models for an assessment of a state and the forecast of development of economic events and processes.

The electronic educational and methodical complex includes the following components:

training program

training material: the theoretical block (2 parts) with examples of the solution of tasks and practical tasks

control tasks (tasks) on kazhdoychast (2)

tests according to each section (7)

final tests (2)

glossaries (2)

anthologies of a subject (2)

The EUMK theoretical block consists of two parts, each of which is broken into sections:

I part Probability theory

Casual events

Classification of casual events. Actions over events.

Statistical, classical and geometrical definition of probability of an event.

Combination theory elements.

Direct calculation of probability of an event.

Conditional probability. Theorems of multiplication and addition of probabilities.

Formula of a total probability. Bayes's formula.

Scheme of re-testing of Bernoulli. Approximate formulas.

Random variables.

Concept of a random variable.

Law of distribution of a discrete random variable.

Function of distribution of a random variable and its property.

Function of distribution and density of distribution of a continuous random variable.

Numerical characteristics of random variables.

Practical occupation 1 (to sections 1,2)

Fundamental laws of distribution of random variables.

Binomial law of distribution.

Law of distribution of Poisson.

Geometrical distribution.

Hyper geometrical distribution.

Uniform law of distribution.

Indicative law of distribution.

Normal law of distribution.

Distribution of some random variables presenting to function of normal amounts.

Law of large numbers. System of two random variables.

Markov and Chebyshev's inequalities.

Chebyshev's theorem.

Bernoulli's theorem.

Poisson's theorem.

Central limit theorem.

Concept about system of random variables and the law of its distribution.

Function of distribution of a two-dimensional random variable.

Density of distribution of a two-dimensional random variable.

Dependence and independence of two random variables.
Conditional laws of distribution of the random variables making systems.
Numerical characteristics of a two-dimensional random variable.
Practical occupation 2 (to sections 3,4)
II part Mathematical statistics
5. Statistical estimates of parameters of distribution
5.1. Subject of mathematical statistics
5.2. Basic concepts of mathematical statistics
5.3. Selection, its representation and numerical characteristics
5.4. Dot estimates of numerical characteristics
5.5. Interval estimates of numerical characteristics
5.6. The solution of standard tasks in a MSExcel package
Practical occupation 3 (to section 5)
6. Check of statistical hypotheses
6.1. Main definitions
6.2. The mistakes made when checking statistical hypotheses
6.3. General scheme of check of statistical hypotheses
6.4. Check of parametrical statistical hypotheses
6.5. Check of nonparametric statistical hypotheses
6.6. The solution of standard tasks in a MSExcel package
7. Statistical dependences.
7.1. Dispersive analysis
7.2. Correlation analysis
7.3. Regression analysis
7.4. The solution of standard tasks in a MSExcel package

For an assessment of assimilation of a training material tests according to each section are provided. For examination 2 final tests, on 40 questions covering all educational sections are prepared. For delivery of two examinations it is necessary to solve 2 examinations including practical tasks of all subjects and to answer not less, than 60% of questions of the final test.

EUMK contains the explanatory dictionary of the terms (glossary) used in this course (for each part the), and the list of the recommended additional literature and the websites for collecting additional information.

When developing the electronic educational and methodical complex "Probability Theory and Mathematical Statistics" was LaTeX and the spreadsheets MS Excel are used text redaktorymsword. For the solution of examinations the student needs the computer with the established MSOffice.

Novelty consists in configuration of material in the form of thematic blocks from a teoriyeya practical examples of the solution of tasks as "manually" (with application of formulas), and with use of special functions and the Excel tools. Such approach allows students to study independently discipline, practically without resorting to other sources and to check the gained knowledge in a test form.

**List of sources of information**

1. Kremer N. Sh. Probability theory and mathematical statistics. Textbook, M., UNITY, 2004.

2. Gmurman V. E. The management to the solution of tasks in probability theory and mathematical statistics. - M, the Higher school, 2009.

3. Bulycheva S. V. Applied problems of mathematical statistics [An electronic resource]: Practical work. - M.: Federal State Unitary Enterprise NTTs Informregistr, Magnitogorsk state. tekhn. un-t of G. I. Nosov. – Electron. text data. - Magnitogorsk: MGTU of G. I. Nosov, 2015. - Access mode: http://www.portal magtu.ru//.-Zagl. from the screen.

**2. The used technical means**

IBMPC, any, more l, 5 GHz; 1 GB; 500 MB of HDD; MS WindowsXP above; Mozilla Firefox, Google Chrome, Opera, Internet Explorer; Moodle 1.9 Apache+php+mySQL.

**3. Special conditions of application and requirement of organizational, technical and technological character**

No.

**4. Conditions of transfer of program documentation or its sale**

Distribution of the remote course "Probability Theory and Mathematical Statistics": the electronic educational and methodical complex is engaged in FGBOOU WAUGH "Magnitogorsk state technical university of G. I. Nosov". For obtaining detailed information on conditions of distribution it is necessary to contact the address: 455000, Chelyabinsk Region, Magnitogorsk, Lenin Ave. 114, ph. (3519) 38-06-35, e-mail: ceoridot@yandex.ru

## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic resource "of TMM. Course design" (directions: 18.03.02. Power - and resource-saving processes in chemical technology, petrochemistry and biotechnology, 23.03.03. Operation of transport technological machines and complexes, level - a bachelor degree)"

*Volga polytechnical institute (branch) of federal public budgetary educational institution of the higher education "Volgograd state technical university"*

*Sarazov A.V., Hudyakov K.V.*

***UDC** 378*

***GRNTI** 14.35.07, 30.15.35*

**1. Functional purpose of a product, area of its application, its appointment**

Electronic resource "TMM. Course design" is an educational and methodical grant and contains electronic and text data (1 file: 2,62 MB).

The electronic educational and methodical grant of TMM Course design (authors A.V. Sarazov, K.V. Khudyakov) is developed according to requirements of Federal state standard of higher education and are intended for the students of a bachelor degree who are trained at

Automotive and Evening faculties of the Volga polytechnical institute (branch) of the Volgograd state technical university in the directions in which curricula the discipline "The theory of mechanisms and cars" is declared. The main target audience of methodical instructions — the students resident students, night-school students, correspondence students, students getting second higher education.

МИНОБРНАУКИ РОССИИ
Федеральное государственное бюджетное образовательное учреждение высшего образования
«Волгоградский государственный технический университет»
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Электронная библиотека студента  На главную

УДК 531.8

Рецензенты:
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Канд. тех. наук, доцент кафедры «Общетехнические дисциплины» Волжского института строительства и технологий (филиала) ФГБОУ ВПО «Волгоградский государственный архитектурно-строительный университет» Горин Н.И.

**О диске**

Издается по решению редакционно-издательского совета Волгоградского государственного технического университета

Все права на размножение и распространение в любой форме остаются за разработчиком.

Нелегальное копирование и использование данного продукта запрещено.

Саразов, А.В. **ТММ. Курсовое проектирование.** [Электронный ресурс]: учебно-методическое пособие / А.В. Саразов, К.В. Худяков // Электрон. текстовые дан. (1 файл: 2,62 MB) - Волжский, ВПИ (филиал) ВолгГТУ, 2016. - Систем. требования: Windows 95 и выше; ПК с процессором 486+; CD-ROM. - номер свид. о регистрации

Содержит указания к выполнению курсового проекта (курсовой работы) по теории механизмов и машин. Задания также могут быть использованы студентами для самоподготовки. Предназначены для студентов, обучающихся по всем направлениям бакалавриата.

**Ключевые слова:** образование в техническом вузе, учебные пособия, механизм, теория механизмов и машин

**Зарегистрирован** в ОФЕРНиО (Объединенный Фонд Электронных Ресурсов "Наука и Образование") (www.ofernio.ru)

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The main goal of this grant — to help students with performance of term papers (projects). Independent work of the student in the solution of the offered tasks is supposed, but he can ask for the help the teacher.

The grant is auxiliary material when studying discipline "The theory of mechanisms and cars" as do not contain the sufficient volume of the theory (the questions necessary for performance of term papers (projects) are considered).

Maintenance of a grant: the general provisions containing requirements to structure and registration of a term paper (project), a task to a term paper (project), the short theory and examples of implementation of all sections of a term paper (project).

Relevance of a grant is caused by the fact that in it tasks, the short theory and examples of performance of a term paper (project) are gathered.

Grant purpose: to provide to students necessary material for independent performance of a term paper (project).

In each task it is necessary to make the structural, kinematic and kinetostatichesky analysis of the lever mechanism, synthesis of an evolvent tooth gearing, synthesis of planetary transfer, synthesis of the cam mechanism. For each task 5 options of basic data are provided, except 3-4 parameters are set by the teacher individually to each student.

**2. The used technical means**

Electronic resource "TMM. Course design" it is created by means of language of a hypertext marking of HTML and does not demand additional installation.

The technical means used during creation of the electronic edition it is the computer with Windows XP OS, the software of MS Word and the visual HTMLReader HTML editor of version 2.5.

**3. Special conditions and requirements of organizational, technical and technological character**

Treats necessary conditions of use of the electronic edition - existence of the personal computer with the processor 486+, Windows 95 OS above with the software Web Browser (Firefox, Opera, IE, etc.), CD ROM. The browser of PDF of documents is necessary for viewing of electronic resources.

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Email: library@volpi.ru

## ADVERTISING AND TECHNICAL DESCRIPTION "Tourism of the Omsk region: twentieth century (Thematic bibliographic index of literature) (direction: 43.03.02 "Tourism" (The international and internal tourism), 51.03.04 "Muzeologiya and protection of objects of cultural and natural heritage", level – a bachelor degree)"

*Levochkina N.A.*

***UDC*** *796.5*
***GRNTI*** *71.37.05, 71.37.13, 71.37.75, 06.71.57*

**1. Functional purpose of development, scope, its restrictions**

The electronic directory resource is created taking into account opportunities to work in the environment of Internet under control of the NETSCAPE NAVIGATOR browser and systematized by the chronological principle, including the list of literature concerning evolution of regional tourism for the last hundred years that allows to gain skills and abilities to carry out professionally focused their analysis, justification.

In the specified look, the offered information resource is represented as the complete, intellectual system containing in the structure the knowledge base in the form of an electronic reference media which structure reflects evolution of Omsk tourism in hundred years. The analysis of reference materials will help to explain, first of all, specific features of its development, occurring at different stages of development of the Russian state and its history, to define priorities of development of regional tourism, its stages and organizational and administrative, communication mechanisms.

Further in the offered help electronic grant the main normative legal acts regulating tourism of the Omsk region are submitted. The author is convinced that detailed studying of the sources presented in an electronic resource will allow to study experience of the organization and management of tourist branch at different stages of its development, to define its specifics taking into account social and economic model and priorities of standard and legal regulation. It will allow to exclude underestimation of a role of a number of factors in formation of modern

structure of management of regional tourism. The electronic resource will be useful both to students, and undergraduates, graduate students, experts experts.

**2. The used technical means**

The technical means used during creation of help and thematic materials it is the Intel Pentium computer, with Windows XP OS and the software of MS Word, PDF, PHP, MySQL, etc.

**3. Special conditions of application and requirement of organizational, technical and technological character**

Treats necessary conditions of use of help and thematic materials - existence of the computer with Windows OS * or Linux with the software Web Browser (Firefox, Opera, IE, etc.).

**4. Conditions of transfer of documentation on development or its sales**

Transfer of help and thematic materials for distance learning in the directions of preparation 43.03.02 "Tourism" (The international and internal tourism), 51.03.04 "Muzeologiya and protection of objects of cultural and natural heritage", especially for studying of discipline "Tourist resources of the Siberian region" can be carried out on the basis of contracts.

Concerning acquisition of a reference media it is necessary to address the author. Address: Russian Federation, 644077, Omsk, Mira Ave., 55 and. Ph.: +7 (3812) 26-84-22 E-mails: lna1970@yandex.ru

## ADVERTISING AND TECHNICAL DESCRIPTION "Multimedia lectures "of the Physicist: fluctuations and waves. Version 1"

*Federal public budgetary educational institution of the higher education "Omsk state technical university"*

*Egorova V.A.*

***UDC** 378*

***GRNTI** 14.35.07, 29.01.45, 29.37.03*

**1. Functional purpose of the program, scope, its restrictions**

Multimedia lectures "Physics: fluctuations and waves. Version 1" are intended for the students studying a course of the general physics in technical colleges and who are trained in the Technosphere safety direction 280700.62. The developed lectures took place approbation in Omsk the state technical university, and on the content and volume are suitable for other specialties of technical college.

Use of the developed multimedia lectures is focused on ensuring the level and quality of training of students conforming to requirements of the State educational standards of professional education. Development of original training materials of due level is urged to provide efficiency of development by students of the studied sections of a course of physics due to use of several information environments, namely three-dimensional and two-dimensional graphics, texts, schemes, video, photos, moving images (animation), a soundtrack.

Modern high requirements to the methodical level of supply of lecture material cause need of application of multimedia lectures for teaching physics. Relevance of development of similar materials is indisputable and is confirmed by the universal and actively developing use of author's multimedia lectures on any objects studied in various higher education institutions.

Lectures "Physics: fluctuations and waves. Version 1" represent author's multimedia interpretation of the section of the same name of a course of the general physics of technical university and are calculated on 6 classroom hours. Author's multimedia interpretation of this

section of a course of physics contains 45 slides of the presentations created in Microsoft Office PowerPoint 2010.

The structure of the developed multimedia presentations includes the following sections:

Fluctuations.

Subsections:

1.1 Harmonic oscillations. Elastic and quasi-elastic forces. Own fluctuations.

1.2 Addition of harmonic oscillations.

1.3 Own fading mechanical oscillations. The sizes characterizing speed of attenuation of fluctuations: attenuation coefficient, logarithmic decrement of attenuation, good quality, their physical sense. Aperiodic process.

1.4 The compelled mechanical oscillations. Resonance. Resonant curves for shift amplitude.

1.5 Free harmonic oscillations in an ideal oscillatory contour.

1.6 The free (fading) fluctuations in a consecutive oscillatory contour. The sizes characterizing speed of attenuation of fluctuations: attenuation coefficient, logarithmic decrement of attenuation, good quality, their physical sense. Condition of transformation of fluctuations into aperiodic process. Critical resistance.

1.8 The compelled harmonic oscillations in an oscillatory contour. Resonance. Resonant curves for a charge of the condenser and current in a contour.

Waves.

Subsections:

2.1 Waves, wave modes. Basic concepts (characteristic of a wave).

2.2 Mechanical waves. The equation of the flat wave extending along axis X. The equation of the flat wave extending in any direction. Equation of a spherical wave.

2.3 Energy of mechanical waves, energy stream, energy stream density. Umov's vector.

2.4 Electromagnetic waves. Properties of electromagnetic waves. Energy of electromagnetic waves, energy stream, energy stream density. Poynting's vector.

The developed lectures contain the description of the physical phenomena, conclusions of basic laws, definitions and interrelations of sizes with use of the historic facts allowing to illustrate development of scientific representations in the field of mechanics. In the presentation the schedules and drawings explaining theoretical material are used.

In the conditions of absence or insufficiency of material resources use of educational video fragments is of great importance for carrying out real demonstration experiments during lecture and reduction of hours of classroom occupations at the same volume of the working program. For the solution of the specified problems in multimedia lectures are used a large number of video records of open access of the Internet network. Use of multimedia equipment besides information support allows to diversify and vary lecture demonstrations that promotes more conscious perception of material and activization of process of knowledge of students, increases their interest in the studied subject. Presentation and informational content of the used lecture video demonstrations allows to focus attention of students on the most important points of the discussed subject, to involve different types of memory and to diversify material representation.

It is possible to carry a possibility of expeditious change to advantages of the created presentations that allows to adapt a course under concrete specialty, and also to focus attention of students on the latest developments of science.

Representation of material with use of multimedia lectures allows to unify records of lecture by students, to visualize process of storing and to exclude mistakes and inaccuracies, possible at record of lecture at traditional approach to a material statement. Presence of such abstract at students facilitates their further work with material and the subsequent control of knowledge by the teacher.

Demonstration of the developed slides is focused on creation at lecture of the friendly working atmosphere at assimilation of a difficult training material, optimum on time.

The design of slides allows to support attention of students throughout all lecture without tension of organs of vision and promotes creation of the positive relation to the provided information.

Multimedia lectures presentations were projected for maintenance of reading classroom lectures by the teacher to students of full-time courses. At the same time the volume and available presentation of the material, presented in lectures, allows to use development for independent training of students for occupations both at internal, and at the correspondence and remote forms of education.

**2. The used technical means**

When developing multimedia lectures "Physics: fluctuations and waves. Version 1" Office package of Microsoft Office applications 2007-2010, Movavi Video Converter 10.2.1 was used.

The available and at the same time sufficient interface for development of the compact slide presentations has the Power Point appendix entering office Microsoft Office package.

**3. Special conditions of application and requirement of organizational, technical and technological character**

For functioning of the multimedia presentations "Physics: fluctuations and waves. Version 1" on the computer of the user the following equipment rooms and software are necessary:

Personal Intel Pentium computer above.
Random access memory – 6 MV.
Free space on the hard drive of 47 MB.
Color monitor.
The video adapter with memory not less than 4 MB.
OC Windows XP above.
MS Power Point 2007 above.

For use of multimedia development "Physics: fluctuations and waves. Version 1" when lecturing it is necessary to use the audience equipped besides the listed above equipment with a multimedia projector, the sound intensifying and sound-reproducing equipment, the stationary projection screen.

Conditions of application have to conform to the modern requirements imposed to operation of an educational computer class.

**4. Conditions of transfer and sale of program documentation**

Multimedia lectures "Physics: fluctuations and waves. Version 1", the presentations and documentation accompanying them to them can be transferred to the interested person or the organization on the basis of the contract with OMGTU and authors according to the current legislation.

## ADVERTISING AND TECHNICAL DESCRIPTION "Multimedia lectures "of the Physicist: wave optics. Version 1"

*Federal public budgetary educational institution of the higher education "Omsk state technical university"*
*Egorova V.A.*

***UDC** 378*
***GRNTI** 14.35.07, 29.01.45, 29.37.03*

**1. Functional purpose of the program, scope, its restrictions**

Multimedia lectures "Physics: wave optics. Version 1" are intended for the students studying a course of the general physics in technical colleges and who are trained in the Technosphere safety direction 280700.62. The developed lectures took place approbation in Omsk the state technical university, and on the content and volume are suitable for other specialties of technical college.

Use of the developed multimedia lectures is focused on ensuring the level and quality of training of students conforming to requirements of the State educational standards of professional education. Development of original training materials of due level is urged to provide efficiency of development by students of the studied sections of a course of physics due to use of several information environments, namely three-dimensional and two-dimensional graphics, texts, schemes, video, photos, moving images (animation), a soundtrack.

Modern high requirements to the methodical level of supply of lecture material cause need of application of multimedia lectures for teaching physics. Relevance of development of similar materials is indisputable and is confirmed by the universal and actively developing use of author's multimedia lectures on any objects studied in various higher education institutions.

Lectures "Physics: wave optics. Version 1" represent author's multimedia interpretation of the section of the same name of a course of the general physics of technical university and are calculated on 8 classroom hours. Author's multimedia interpretation of this section of a course of physics contains 87 slides of the presentations created in Microsoft Office PowerPoint 2010.

The structure of the developed multimedia presentations includes the following sections:

1. Optics as section of physics.

Subsections:

1.1 Classification.

1.2 Historical information.

1.3 Dual nature of light.

1.4 Wave optics.

2. Light interference.

Subsections:

2.1 Coherent waves. Amplitude of the resulting fluctuation when imposing coherent waves.

2.2 Conditions of supervision of maxima and minima of an interference.

2.3 Ways of supervision of an interference of light.

2.4 Calculation of an interferential picture from two linear light sources.

3. Diffraction of light.

Subsections:

3.1 Huygens's principle – Fresnel.

3.2 Method of zones of Fresnel

3.3 Fresnel's diffraction from the elementary barriers

3.4 Fraunhofer's diffraction on one crack

3.5 Fraunhofer's diffraction on a diffraction lattice

4. Polarization of light.

Subsections:

4.1 The natural and polarized light

4.2 Polarizers

4.3 Malus's law

4.4 Polarization at reflection from dielectric

The developed lectures contain the description of the physical phenomena, conclusions of basic laws, definitions and interrelations of sizes with use of the historic facts allowing to illustrate development of scientific representations in the field of mechanics. In the presentation the schedules and drawings explaining theoretical material are used.

In the conditions of absence or insufficiency of material resources use of educational video fragments is of great importance for carrying out real demonstration experiments during

lecture and reduction of hours of classroom occupations at the same volume of the working program. For the solution of the specified problems in multimedia lectures are used a large number of video records of open access of the Internet network. Use of multimedia equipment besides information support allows to diversify and vary lecture demonstrations that promotes more conscious perception of material and activization of process of knowledge of students, increases their interest in the studied subject. Presentation and informational content of the used lecture video demonstrations allows to focus attention of students on the most important points of the discussed subject, to involve different types of memory and to diversify material representation.

It is possible to carry a possibility of expeditious change to advantages of the created presentations that allows to adapt a course under concrete specialty, and also to focus attention of students on the latest developments of science.

Representation of material with use of multimedia lectures allows to unify records of lecture by students, to visualize process of storing and to exclude mistakes and inaccuracies, possible at record of lecture at traditional approach to a material statement. Presence of such abstract at students facilitates their further work with material and the subsequent control of knowledge by the teacher.

Demonstration of the developed slides is focused on creation at lecture of the friendly working atmosphere at assimilation of a difficult training material, optimum on time.

The design of slides allows to support attention of students throughout all lecture without tension of organs of vision and promotes creation of the positive relation to the provided information.

Multimedia lectures presentations were projected for maintenance of reading classroom lectures by the teacher to students of full-time courses. At the same time the volume and available presentation of the material, presented in lectures, allows to use development for independent training of students for occupations both at internal, and at the correspondence and remote forms of education.

**2. The used technical means**

When developing multimedia lectures "Physics: wave optics. Version 1" Office package of Microsoft Office applications 2007-2010, Movavi Video Converter 10.2.1 was used.

The available and at the same time sufficient interface for development of the compact slide presentations has the Power Point appendix entering office Microsoft Office package.

**3. Special conditions of application and requirement of organizational, technical and technological character**

For functioning of the multimedia presentations "Physics: wave optics. Version 1" on the computer of the user the following equipment rooms and software are necessary:

Personal Intel Pentium computer above.

Random access memory – 11 MV.

Free space on the hard drive of 216 MB.

Color monitor.

The video adapter with memory not less than 4 MB.

OC Windows XP above.

MS Power Point 2007 above.

For use of multimedia development "Physics: wave optics. Version 1" when lecturing it is necessary to use the audience equipped besides the listed above equipment with a multimedia projector, the sound intensifying and sound-reproducing equipment, the stationary projection screen.

Conditions of application have to conform to the modern requirements imposed to operation of an educational computer class.

**4. Conditions of transfer and sale of program documentation**

Multimedia lectures "Physics: wave optics. Version 1", the presentations and documentation accompanying them to them can be transferred to the interested person or the organization on the basis of the contract with OMGTU and authors according to the current legislation.

## ADVERTISING AND TECHNICAL DESCRIPTION "Multimedia lectures "Elements of quantum physics and quantum mechanics. Version 1"

*Federal public budgetary educational institution of the higher education "Omsk state technical university"*

*Egorova V.A.*

***UDC** [535.14+530.145]:004.9 (042.4)*

***GRNTI** 14.35.07, 29.01.45, 29.05.15, 29.35.39*

**1. Functional purpose of the program, scope, its restrictions**

Multimedia lectures "Elements of quantum physics and quantum mechanics. Version 1" are intended for the students studying a course of the general physics in technical colleges and who are trained in the Technosphere safety direction 280700.62. The developed lectures took place approbation in Omsk the state technical university, and on the content and volume are suitable for other specialties of technical college.

Use of the developed multimedia lectures is focused on ensuring the level and quality of training of students conforming to requirements of the State educational standards of professional education. Development of original training materials of due level is urged to provide efficiency of development by students of the studied sections of a course of physics due to use of several information environments, namely three-dimensional and two-dimensional graphics, texts, schemes, video, photos, moving images (animation), a soundtrack.

Modern high requirements to the methodical level of supply of lecture material cause need of application of multimedia lectures for teaching physics. Relevance of development of similar materials is indisputable and is confirmed by the universal and actively developing use of author's multimedia lectures on any objects studied in various higher education institutions.

Lectures "Elements of quantum physics and quantum mechanics. Version 1" represent author's multimedia interpretation of the section of the same name of a course of the general physics of technical university and are calculated on 10 classroom hours. Author's multimedia interpretation of this section of a course of physics contains 128 slides of the presentations created in Microsoft Office PowerPoint 2010.

The structure of the developed multimedia presentations includes the following sections:

1. Quantum nature of radiation.

Subsections:

1.1 Types of radiations. Thermal radiation.

1.2 Characteristics of thermal radiation. Kirchhoff's law.

1.3 Laws of thermal radiation. Ultra-violet accident. Planck's hypothesis.

1.4 External photoeffect. Experimental laws of photoeffect. Contradictions of the wave theory to results of experiments.

1.5 Quantum theory of photoeffect. Explanation of regularities of photoeffect.

1.6 Experience to Botha. Photons. Light pressure. Corpuscular and wave dualism.

1.7 Compton's effect.

2. Development of ideas of an atom structure.

Subsections:

2.1 Rutherford experiment. Atom model according to Rutherford. Postulates of Bor. Frank's experience and Hertz.

2.2 The elementary theory of atom of hydrogen across Bor. Theory shortcomings.

3. Elements of quantum mechanics

3.1 De Broil's hypothesis. Devisson and Dzhermer's experiences; Thomson and Tartakovsky; Biberman, Sushkin and Fabrikant. Wave properties of substance. Statistical sense of waves of de Broil.

3.2 Microparticles. Ratio of neopredelennost of Heisenberg. Limits of applicability of concepts of classical mechanics.

3.3 Schrödinger equation. Physical sense and properties of wave function.

3.4 Atom of hydrogen in quantum mechanics. Quantum numbers of an electron in atom (main, azimuthal, magnetic). Degenerate states, frequency rate of degeneration. Rule of selection.

3.5 Multielectronic atoms. Electron backs. Paulie's principle. Principles of creation of periodic system of elements.

The developed lectures contain the description of the physical phenomena, conclusions of basic laws, definitions and interrelations of sizes with use of the historic facts allowing to illustrate development of scientific representations in the field of mechanics. In the presentation the schedules and drawings explaining theoretical material are used.

In the conditions of absence or insufficiency of material resources use of educational video fragments is of great importance for carrying out real demonstration experiments during lecture and reduction of hours of classroom occupations at the same volume of the working program. For the solution of the specified problems in multimedia lectures are used a large number of video records of open access of the Internet network. Use of multimedia equipment besides information support allows to diversify and vary lecture demonstrations that promotes more conscious perception of material and activization of process of knowledge of students, increases their interest in the studied subject. Presentation and informational content of the used lecture video demonstrations allows to focus attention of students on the most important points of the discussed subject, to involve different types of memory and to diversify material representation.

It is possible to carry a possibility of expeditious change to advantages of the created presentations that allows to adapt a course under concrete specialty, and also to focus attention of students on the latest developments of science.

Representation of material with use of multimedia lectures allows to unify records of lecture by students, to visualize process of storing and to exclude mistakes and inaccuracies, possible at record of lecture at traditional approach to a material statement. Presence of such abstract at students facilitates their further work with material and the subsequent control of knowledge by the teacher.

Demonstration of the developed slides is focused on creation at lecture of the friendly working atmosphere at assimilation of a difficult training material, optimum on time.

The design of slides allows to support attention of students throughout all lecture without tension of organs of vision and promotes creation of the positive relation to the provided information.

Multimedia lectures presentations were projected for maintenance of reading classroom lectures by the teacher to students of full-time courses. At the same time the volume and available presentation of the material, presented in lectures, allows to use development for independent training of students for occupations both at internal, and at the correspondence and remote forms of education.

**2. The used technical means**

When developing multimedia lectures "Elements of quantum physics and quantum mechanics. Version 1" Office package of Microsoft Office applications 2007-2010, Movavi Video Converter 10.2.1 was used.

The available and at the same time sufficient interface for development of the compact slide presentations has the Power Point appendix entering office Microsoft Office package.

**3. Special conditions of application and requirement of organizational, technical and technological character**

For functioning of the multimedia presentations "Elements of quantum physics and quantum mechanics. Version 1" on the computer of the user the following equipment rooms and software are necessary:

Personal Intel Pentium computer above.
Random access memory – 8 MV.
Free space on the hard drive of 82 MB.
Color monitor.
The video adapter with memory not less than 4 MB.
OC Windows XP above.
MS Power Point 2007 above.

For use of multimedia development "Elements of quantum physics and quantum mechanics. Version 1" when lecturing it is necessary to use the audience equipped besides the listed above equipment with a multimedia projector, the sound intensifying and sound-reproducing equipment, the stationary projection screen.

Conditions of application have to conform to the modern requirements imposed to operation of an educational computer class.

**4. Conditions of transfer and sale of program documentation**

Multimedia lectures "Elements of quantum physics and quantum mechanics. Version 1", the presentations and documentation accompanying them to them can be transferred to the interested person or the organization on the basis of the contract with OMGTU and authors according to the current legislation.

## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic resource "of the Physicist. Part III. Electricity"

*Volga polytechnical institute (branch) of federal public budgetary educational institution of the higher education "Volgograd state technical university"*
*Zubovich S.O., Surkaev A.L., Suhova T.A., Kumysh M.M., Rahmankulova G.A.*

***UDC** 378*
***GRNTI** 14.35.07, 29.17.41, 29.17.43*

**1. Functional purpose of a product, area of its application, its appointment**

Electronic resource "Physics. Part III. The electricity" is the manual and contains electronic and text data (1 file: 608 Kb).

The manual is written according to the federal state educational standard of the higher education.

The purpose of writing of this grant is, first of all, creation of a uniform source of information when studying this section of physics by students of all directions of training of technical college.

Authors were faced by a number of tasks: to examine works of other authors on this subject, to reveal the most significant and important points when studying this course, to structure all material in logical sequence for the easiest perception of information the reader.

МИНОБРНАУКИ РОССИИ
Федеральное государственное бюджетное образовательное учреждение высшего образования
«Волгоградский государственный технический университет»
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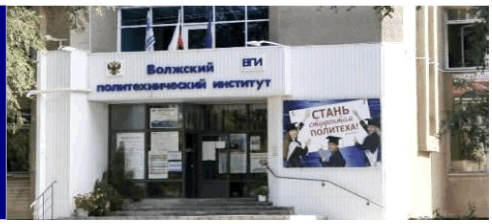


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**О диске**

Издается по решению редакционно-издательского совета Волгоградского государственного технического университета

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Учебное пособие написано в соответствии с государственным образовательным стандартом для высшего специального образования.
Небольшой объем учебного пособия достигнут с помощью тщательного отбора и лаконичного изложения материала. Пособие может использоваться при проведении аудиторных лекционных занятий среди студентов технических специальностей вузов.
Пособие может быть полезно для студентов всех специальностей.

**Ключевые слова:** образование в техническом вузе, учебные пособия, электростатика, электрический заряд, электрическое поле, закон Кулона, постоянный электрический ток, закон Ома, электрический разряд, электролиз.

**Зарегистрирован** в ОФЕРНиО (Объединенный Фонд Электронных Ресурсов "Наука и Образование") (www.ofernio.ru)

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The section "Electricity" is the whole science. Especially valuable is this grant from the point of view of the reader since it is not necessary "to shovel" large volume of various editions. It is enough to use of one. The small volume of the manual is reached by means of careful selection of information, emphasis of authors on the most essential subjects of the section "Electricity". The grant can be used as the teacher when carrying out classroom lecture occupations for students of the technical directions and specialties, and students for independent studying.

In a grant contents of sections of the general physics of "Elektrostatik", "Laws of a direct current" and "Electric current in various environments" are stated.

Summary.

In the nature there are two types of electric charges which interact among themselves. Conditionally all charges in the nature are divided into two types – positive and negative, besides the charges of the same name make a start, and heteronymic – are attracted. Historically there were two points of view on the mechanism of electric interaction of charges: theory of long-range action and theory of short-range interaction. The modern science adheres to the second point of view.

The field unlike substance is a special form of matter. The invariable field in time is studied by an electrostatics, changing – electrodynamics. Typical carriers of charges in substance are negatively charged electrons and positively charged protons. The size of their charge is very small and such charge – is called elementary. All charged bodies have charge size, multiple to elementary.

It is possible to create a charge on a body in the different ways, the main of them

the following is:

1) Electrization by friction.

2) Electrization by influence or electrostatic induction

The basic law in an electrostatics is Coulomb's law. Two dot charges interact in vacuum with force directly proportional to work of their sizes and inversely proportional to a distance square between them. Force is directed along a straight line them connecting.

For the quantitative and qualitative description of electric field two characteristics are entered: power - intensity and power - potential. Intensity - the vector size determined by force operating from the field on the trial charge placed in this field. Potential - the scalar size determined by potential energy of the single charge placed in this point of the field.

Electric field can exist both in dielectrics, and in conductors. And in the second case there is an opportunity to accumulate energy. The concept of the electric capacity as sizes characterizing ability of the conductor to accumulate electric charge is entered. Energy of electric field also is defined by capacity.

Electric current is called any ordered movement of charged particles. Electrons (in metals), ions (in electrolytes), and other particles can be current carriers in the carrying-out environment. Ability of bodies to carry out electric current is called electric conductivity. There are several types of electric conductivity.

The main characteristic of electric current is current. The size characterizing ability of the conductor to interfere with passing on it electric current is called resistance.

If in a chain carriers of current are affected only by forces of an electrostatic field, then there is a movement of charges from points to high potential to points with a smaller potential. It leads to alignment of potentials in all points of a chain and to disappearance of current. Maintenance of a constant difference of potential is carried out not by electrostatic forces. Third-party forces make work on movement of electric charges. The physical quantity determined by work of third-party forces when moving a single positive charge is called the electromotive force (EMF). Tension on a site of a chain is called the physical quantity determined by the work made by the total field of Coulomb and third-party forces when moving a single positive charge.

Conditions necessary for creation of a direct current of conductivity:

1. existence of free carriers of current (free charges);

2. existence of the electric field creating the ordered movement of free charges;

3. third-party forces of not electric nature have to affect free charges, besides Coulomb forces.

The electric chain represents set of various conductors and sources of current. Basic laws for electric chains are the law of Ohm and Joule Lenz. Kirchhoff's rules are applied to calculation of more difficult sites of a chain.

Electric current can exist in vacuum (due to issue), in liquid (electrolytic dissociation), in gases (gas categories) and in semiconductors (r-n transition).

At the end of the edition the main constants and reference materials, and also bibliographic sources are given.

**2. The used technical means**

Electronic resource "Physics. Part III. Electricity" it is created with use of language of a hypertext marking of HTML and does not demand additional installation.

The technical means used during creation of the electronic edition it is the computer with Windows XP OS, the software of MS Word and the visual HTMLReader HTML editor of version 2.5.

**3. Special conditions and requirements of organizational, technical and technological character**

Treats necessary conditions of use of the electronic edition - existence of the personal computer with the processor 486+, Windows 95 OS above with the software Web Browser

(Firefox, Opera, IE, etc.), CD ROM. The browser of PDF of documents is necessary for viewing of electronic resources.

**4. Conditions of transfer of documentation or its sale**

All rights for reproduction and distribution in any form remain for the developer.

Illegal copying and use of this product is forbidden.

On all questions it is necessary to address to the Volga polytechnical institute (branch) of VOLGGTU

Address: Russia, 404121, Volgograd Region. Volzhsky, st. of Engels, 42a

Phone: 8 (8443) 221956

Email: library@volpi.ru

## ADVERTISING AND TECHNICAL DESCRIPTION "The Manual "Adaptation Period of First-year Students of Higher Education Institutions" (the 03.03.01-Physiology Direction, a Profile — the Undergraduate, the Graduate Student)"

*Sterlitamak branch VO Bashkirsky Public Educational Institution state university*

*Saleev EH.R.*

***UDC** 612.8:371.39:796 (07)*

***GRNTI** 77.05.05*

**1. Functional purpose of a product, scope, its restrictions**

The monograph "Longityudny Comparative Research of Morfofunktsionalny Features of Development of 18-19 Summer First-year Students in Dynamics of Additional Classes at Physical Education Classes" is devoted to one of the priority directions of our state, improvement of student's youth.

Studying of the morfofunktsionalny and psychophysiological features of the growing organism reflecting the level of a state of health in the conditions of various educational environments and also influences of conditions of accommodation, became one of actual researches in various branches of science now.

Changes of a morfofunktsionalny condition of an organism of students reflect positive or negative sides of specifics of student's life. Conditions of accommodation and process of training in a higher educational institution, influence adaptive opportunities of the person and are one of the most important questions of age physiology. Studying of adaptive opportunities of an organism gives that necessary range of knowledge which reflects interrelation of an organism with Wednesday and defines risk of development of diseases and level of health.

Social and economic transformations in the country entailed also changes in teaching and educational process in higher educational institutions. What, undoubtedly, was reflected also in teaching physical culture as disciplines. Involvement of students to occupations by physical culture and sport, strengthening of an educational orientation of a practical training, change of contents and forms of sports education, its transformation into an effective measure of formation of health and formation, development and self-development of the personality. It is stated in requirements of the State educational standard.

Numerous researches show that accommodation of the person in the changed klimatogeografichesky conditions in combination with information, psychoemotional loading leads to more intensive use and exhaustion of adaptation reserves of an organism.

Training in a higher educational institution is a specific form of intellectual activity and the state of health of students occupies a special priority role in the program of our state.

Improvement of the nation is an important task at all stages of development of society.

Relevance of this subject does not leave also a shadow of doubt in the importance of the matter, as became a starting point of our research.

1.1. The monograph purpose at the first investigation phase

Was to study and give the comparative characteristic of a functional and physical condition of several generations of the first-year students during adaptation upon transition from average general education system of training to profile level differentiated on sexual distinction and permanent residence before receipt in the Sterlitamak branch of the Bashkir state university.

For achievement of the purpose the following tasks were set: to study physical development of students, physical fitness, to estimate a condition of adaptive opportunities.

All this predetermines high relevance of search and scientific justification of the effective remedies promoting increase of efficiency of process of physical training.

One of parameters of definition of a state of health is the anthropometry: growth, weight, thorax circle, geometrical form of bodies and fabrics.

The assessment of physical health, is defined by the arterial pressure (AP), the heart rate (HR), the vital capacity of lungs (VCL).

Research was conducted in 2 stages.

1 stage the period consisted 1998-2013 in supervision, studying and collecting materials.

The assessment of physical development of each student was made by method of standards. As control for an assessment of dynamics of indicators of physical development are used

"Methodical recommendations of an assessment of physical development and state of health of children and teenagers …" state committee of sanitary and epidemiological surveillance of the Russian Federation (on March 17, 1996, No. 01-19/31-17).

590-620 first-year students of the Sterlitamak branch of the Bashkir state university differentiated by gender, group of health, a permanent address before entering a higher education institution are examined. Studying of morfofunktsionalny indicators of first-year students was carried out annually in September of each new academic year. The Vital Capacity of Lungs (VCL) decided on the help of a dry lung-tester.

The obtained data estimated size ZhEL with due size on Ludwig's formula:

ZhEL for men = 40khrost (cm) +30khves (kg)-4400;

ZhEL for women = 40khrost (cm) +10khves (kg)-3800.

At the first investigation phase the comparative characteristic of physical development and physical fitness is given.

Physical development of first-year students was estimated on indicators of length (cm) and mass (kg) of a body, a thorax circle in a pause (cm) by the standard techniques (A.A. Baranov et al., 1999; 2004; V. R. Kuchma et al., 2000; V. R. Kuchma, 2001; G. L. Apanasenko, 2002).

The assessment of physical development was supplemented with calculation of a number of indexes of proportionality: index of body weight of Quetelet

(IMT = m/l ²), where m-body weight (kg), l-length of a body (m).

Erisman's index (index of proportionality of development of a thorax) a thorax circle – (body length cm / 2). Each first-year student at the beginning of academic year was tested for formation of physical quality of endurance – run on 1000 meters.

**The conclusion on the first investigation phase**

Body length at first-year students of the city and village for the 15th summer period of research have no reliable distinctions in indicators, at the same time body weight is less ($r < 0,05$) at young men of 2012 of entering a higher education institution, than at students of 1998. The tendency of decrease of data of an index of body weight and a circle of a thorax is looked through.

City first-year students of 2012 began to run a distance of 1000 meters for 18% more slowly, and rural for 22,7% ($r < 0,05$), than their peers of 1998.

Against decline in quality of endurance both at city, and at rural children the thorax is developed poorly, the negative indicator of an index of Erisman is revealed. Perhaps, also the low indicator of vital capacity of lungs at first-year students of 2012 follows from here, is 13%

less than due size that confirm also regional statistical data which show that healthy unexercised young men have ZhEL average values within the age standard – 4,0-4,5 liters.

Longityudny research shows that length of a body of girls of first-year students of 2012 from the city and the village 3% less (r <0,05), and body weight increased at rural by 10% and according to IMT for 15% (r <0,05), than the contemporaries who arrived in 1998 at city have a tendency on increase, but without reliable distinctions.

The thorax circle without special changes for the entire period of research, an indicator Erisman's index is normal. Results of run on 1000 meters, students from the city also sat down for 2012, girls began to overcome a distance with big time for 18% and 21% (r <0,05) respectively, than girls of 1998.

Vital capacity of the easy city girls who arrived in 2013 for 16% (r <0,05), and at rural girls is 26% less than due size (r <0,05). And in groups of first-year students of 1998 the indicator of ZhEL met age standard.

Thus, for the last 15 years the functional and physical condition of first-year students has a pronounced tendency of decrease of indicators, confirming thereby the thesis that the modern youth began to pay less attention to physical activity during the day.

Longityudny research of the first-year students coming to a higher educational institution gave the grounds to continue studying and to estimate in more detail, and to characterize a state of health of first-year students in dynamics of one year 2013-2014.

From total of the first-year students who came to the Sterlitamak branch of the Bashkir university groups on quantitative structure of 109 first-year students of the Sterlitamak branch Bash GU distinguishing by gender and group of health the classes of physical culture allowing to attend were created.

From them created groups of young men and girls on quantitative structure in (KG) of young men of n=25, girls of n=44, in the experimental group (EG) of young men of n=18 and girls of n=22.

Groups went in for physical culture according to the standard program where track and field athletics, sports (volleyball and basketball), ski preparation and swimming with four-week preparation joins.

Methods of conducting research work

Run is considered one of the most available and simple types of physical culture exerting beneficial influence to all human body. Occupations by run have only positive sides. Strengthens the musculoskeletal device, respiratory, cardiovascular systems.

Intensity of influence depends on the speed of run and is determined by the heart rate (HR). Speed in jogging should not exceed a threshold which at the beginning runners corresponds to 130 beats/min, at well prepared increases to 150 beats/min.

In the course of studies, without breaking structure and sequence of the developed training programs, we decided to use more effectively from our point of view preparatory and final part of a lesson in particular run to use (warm-up run) on target zones having finished till 20 minutes.

For a start defined the maximum ChSS. It for most of people is defined so: from 220 the number of full years is subtracted (age).

It is several target zones, depending on requirements and the purposes engaged the main:

55-65% – in this interval are most effective the trainings aimed at increase of fitness of respiratory and cardiovascular system, but this zone demands bigger time and we used this zone of a probeganiye, as at the involving stage of occupations within the first week.

65-75% – in this range go rather intensive combustion of fats (at the due duration of training). Therefore this (so-called, "low") the zone can be considered target for seeking for weight loss. It is rather far from a maximum hazardous to health and at the same time not bad loads an organism.

70-80% – an "average" zone. The people working in this interval of ChSS work first of all for endurance. Here carbohydrates are rather intensively spent (along with the main suppliers of energy (calories) for work of muscles in the previous interval – fats).

Except these three zones allocate also "high" and "maximum" zones. As it is simple to guess, pulse makes more than 80% of a maximum here (for the last – about 95%). Muscle bulk grows in these zones quicker and respiratory and cardiovascular systems train, however they are connected with high loads of an organism and it is better for the ordinary user who is not playing sports professionally not to be put in them.

Besides run on occupations of experimental group in final part of a lesson carried out exercises on an ankle joint and muscles of an abdominal tension and a back. These exercises were carried out in final part of a lesson, giving 10 minutes. As a result the program took only 30 minutes the general time including run as means for preparation of an organism for further occupation and in conclusion of exercise on separate groups of muscles.

When carrying out physical education classes in preparatory part of occupation run is always used.

1. On the first week we used 55% – 65% of the maximum range within 15 minutes and surely in final part gave only 5 minutes of exercise on an ankle joint.

Exercises consisted of roundabouts foot, advances and back, hvatatelny movements.

The 1st additional class took only 20 minutes the general time of a lesson.

The 2nd lesson, with the same intensity and the same already familiar us exercises.

We followed the rule "from simple to difficult".

2. On the second week of loading running increased till 18–20 minutes at this ChSS did not exceed 60-65% of maximum.

The main objective of the first occupations was to teach independently students "to experience" run and rate of run and it is technically correct to carry out exercises on separate groups of muscles.

The second occupation – repetition fixing of the previous executed exercises.

3. On the third week of our occupations rate of running exercise was controlled independently "breath through a nose". The following classes were given in the same rhythm and in final part of occupation given 10 minutes on separate groups of muscles generally on joints of the lower extremities.

4. The fourth week run of 20 minutes in the same mode, but for the first time we apply calculation of metric area or on circles previously having measured a circle in a gym and having established cones. A power zone during run "low". In final part of occupation of exercise on an ankle joint with use of useful model the Russian Federation patent No. 2406553 of December 20, 2010. Which was approved and introduced in educational and training process in MOE SOSH No. 2 and technical school of physical culture Sterlitamak of the Republic of BashkoAdvertising and technical descriptionstan in 2006-2012.

The subsequent classes were given with gradual increase in loading in running zones, for example (average) zone if the student is not ready to run in this zone remains in previous.

The pro-run distance was controlled. Example: in our hall 1 circle equaled 80 meters.

On initial positions of 20-minute run students from EG and KG overcame on average 13-16 circles, that is from 1040 meters to 1280 meters. In the subsequent occupations carried out control run till 20 minutes the distance increased to 1600 meters, etc. Each student fixed the indicator in the diary of self-checking. The zone of power increased but at the same time, ChSS did not leave norm admissible us an objective. In final part of occupations carried out exercises on an ankle joint and muscles of a back, an abdominal tension.

Results of research are presented at the international scientific and practical conferences

1. "The Morfofunktsionalny condition of students of HIGHER EDUCATION INSTITUTIONS", Social and medicobiological aspects of a health-saving of the population means of adaptive physical culture: materials of the All-Russian scientific and practical conference / under the editorship of O. V. Balberova. – Salavat: 2013.

2. "The comparative characteristic of a functional condition of the students who are engaged at the initial stage in track and field athletics", Social and medicobiological aspects of a health-saving of the population means of adaptive physical culture: materials of the All-Russian scientific and practical conference / under the editorship of O. V. Balberova. – Salavat: 2013.

3. "Influence of physical activity on a mental condition of student's youth", Problems and prospects of development of physical culture and sport in higher education institutions, volume II: materials of the International scientific and methodical conference on February 5, 2014.

4. "Self-checking at independent occupations by physical culture and sport", Education of spiritual and moral culture of the personality: traditions, problems, prospects: Collection of materials of Vseross. With the international participation intramural and extramural nauch. - prakt. konf., on April 25, 2014. Republic of BashkoAdvertising and technical descriptionstan, Sterlitamak.

5. "Characteristic of a morfofunktsionalny condition of an organism of students of 1 course of the Federation Council of BASHGU", Adaptation of biological systems to natural and extreme factors of the environment: materials V of the International scientific and practical conference. – Chelyabinsk, 2014.

6. "Longityudny comparative research of physical development and physical fitness at first-year students", LLC Organizational and Methodical Department of Academy of Natural Sciences basic researches, 2014.

7. "The comparative analysis of a functional condition of young men of first-year students of the Federation Council of BASHGU for the 15th summer period of supervision". Effective realization of health saving technologies in the conditions of a higher educational institution: materials II of the International scientific and practical conference. – Tyumen: RIO FGBOU VPO of "TyumGA-SU", 2015. – 200 pages.

8. "The device and a way for training of track and field athletics jumps" the Russian Federation patent No. 2009131537, of 19.08.2009.

9. "The device for training of an ankle joint, sheaves and muscles of the lower extremities", the Russian Federation Patent No. 2014102981 of June 24, 2014.

10. "Jogging: councils and recommendations for independent occupations by physical culture", Studies. - a method. materials for students of higher education institutions / bus - sost. E.R. Saleev. − Sterlitamak: Sterlitamak branch of BashGU, 2013.

The main content of research is published in 8 scientific works from which 1 – in the magazine the editions recommended to VAK of the Russian Federation, 2 patents of the Russian Federation are taken out, is let out 1 – educational and methodical material.

Recommendations of the leading domestic sports doctors and physiologists - professors I.V. Aulik (1984), V. N. Volkova (1967-2002), N. D. Grayevskoy are taken for a basis of the characteristic of physical development, functional readiness and physical working capacity (2004; 2007), A.G. Dembo (1988), N. A. Fomin (1974-2003) and Yu.N. Vavilova (2001).

Anthropometrical inspection of students was carried out by a standard technique (A.A. Rams, Kuchma V. R., 1999; Avtandilov G.G., 2001; Landa B. H., 2006). Length of a body was measured by means of the wooden vertical height meter with an accuracy of 0,5 cm, body weight was determined on lever scales with an accuracy of 0,1 kg.

On the basis of data of growth and weight the indicator – an index of body weight of Quetelet is calculated veso-growth (IMT, kg/sq.m).

= the body weight (kg) / length of a body (sq.m) – allows to determine by IMT distribution of weight per unit length of a body and by that, to define compliance, surplus or its deficiency. This technique allows to estimate the level of physical development and degree of its harmony.

Physical fitness was estimated according to the GTO 6 complex – steps, in compliance to the age standard, for determination of quality endurance of the girl young men of 3000 meters ran a distance of 2000 meters. Used a manual dynamometer for determination of force of brushes

right and left. A high-speed and power indicator run on 30 meters and a long jump from the place.

At 2 stage for more in-depth study, indicators of cardiorespiratory system which included measurement of the arterial pressure (AP) N. S. Korotkov's by method in a sitting position studied 2013-2014, systolic, diastolic, pulse pressure paid off (SAD, DAD, PAD, mm of mercury.); determination of the heart rate (HR) was carried out by a palpatorny method; calculation of systolic and minute volume of blood (JUICE, ml., IOC, l/min.)

JUICE = (40 + 0,5 x PAD) – (0,6 x DAD) + 3,2 x age (years)

IOC = ChSS x JUICE;

The Vegetative Index of Kerdo (VIK) of VIK = 1 – (DAD / ChSS) x 100;

The Vital Capacity of Lungs (VCL) was determined by a dry lung-tester.

The vital index was defined from a ratio: vital capacity of lungs, ml/body weight, kg.

For definition of oxygen providing an organism used test with a breath delay on a breath (Bar) and on an exhalation (Gencha). The indicator of reaction was estimated on duration of time of a delay and on ChSS indicator, the last was defined by the size of the relation of heart rate after the end of test to initial pulse rate;

PR=ChSS after test of Bar/ChSS rest.

PR at healthy people should not exceed 1,2. Its higher values demonstrate adverse reaction of cardiovascular system to a lack of oxygen.

For an assessment of level of functioning of the blood circulatory system and determination of its adaptation potential used the A.P method. Berseneva (1991).

AP is defined in conventional units – points.

AP = 0,011 x ChSS + 0,014 x SD + 0,008 x DD + 0,014 x V + 0,009 x M – 0,009 x P - 0,27, where In – age advanced in years; M – weight in kg; P – growth in see.

For the comparative characteristic used a rating scale of level of functioning of the blood circulatory system:

1. At AP <2,1, adaptation of an organism is estimated as satisfactory.
2. At AP from 2,11 to 3,2 points to tension of mechanisms of adaptation.
3. At AP from 3,21 to 4,3 adaptation are estimated as unsatisfactory.
4. At AP> 4,3 ─ on failure of adaptation of an organism.

CONCLUSIONS

1. At the first investigation phase for the 15-year period of collecting materials, at young men the tendency of decrease of data of an index of body weight and a circle of a thorax is looked through, at the same time length of a body keeps the positions.
2. Growth of girls of first-year students from the city and the village of 2012 is 3% less (r <0,05), and body weight increased only at rural by 10% and according to IMT for 15% (r <0,05), than the contemporaries who arrived in 1998, at city have a tendency on increase, but without reliable distinctions. A thorax circle without special changes for the entire period of research.
3. Young men first-year students from the city of 2012 began to run a distance of 1000 meters for 18% more slowly, and rural – for 22,7% (r <0,05), than their peers of 1998. Against decline in quality of endurance at city, and at rural children the thorax is developed poorly, the negative indicator of an index of Erisman is revealed. The low indicator of ZhEL at first-year students of 2012, is 13% less than due size.
4. Girls of the first-year student of 2012 began to run the control standard of 1000 meters more slowly, than their contemporaries of 1998 from the city and the village for 18% and 21% (r <0,05) respectively. ZhEL of girls conformed to standard requirements, and girls of 2012 have revenues at city for 16% (r <0,05), and at rural girls is 26% less than due size (r <0,05).
5. At the second investigation phase 2012-2013 on initial positions arterial hypertension is revealed at young men, systolic pressure over 135 mm Hg made 6%, at the end of research decreased by 4% to 126,94±3,39 mm Hg at girls of 117,09±1,08 mm of mercury.

6. At young men of EG VIK for the beginning of researches it was close to vegetative balance –1,00±4,00 conventional unit. within a year increased to high activity, the parasimpotikatoniya was revealed, and the indicator reached the level of-21,19±13,05 conventional units. having exceeded standard requirements and at girls of VIK of-10,97±11,22 conventional units. is followed by activity of a parasympathetic link.

7. ChSS at young men of EG decreased to 62,61±2,68 beats/min. increase in ZhEL came 15% more from an initial indicator and made 4,56±0,33 l. at the same time quality of endurance of 3000 meters increased overcame 23% quicker than an initial indicator.

8. Girls of EG have a reliable decrease in ChSS, increase in volume of lungs happened both in group, and in the relation with KG with reliable distinction of 3,5±0,2 l. at r <0,05 for 23%. Quality endurance increased. In run on 2000 meters they overcame 35% quicker than initial result.

9. Test to the Bar with a breath delay on a breath: young men of EG show increase in time of a delay of breath by 30% with reliable distinction at (r <0,05) - 75,11±6,46 sec., at the same time the indicator of reaction made 1,4. At girls this indicator of test increased by 27%, at PR 1,13.

10. Test of Gencha – a breath delay on an exhalation: young men began to hold the breath for 24% longer than initial indicators, and the girl for 17%.

11. Adaptive potential at young men: the indicator satisfactory in dynamics fell by the beginning of research to standard indicators. At girls this indicator is normal throughout the entire period of research and was without change.

12. Physical fitness in high-speed and power types: a long jump from the place at young men increase happened for 13% having shown at the same time 249,33±11,47 cm at girls for 23% with result of 204,55±11,00 cm.

13. In run on 30 meters of the young man ran 12% quicker, girls for 28%.

Thus, results of research showed positive dynamics in cardiovascular system, and in respiratory. Criteria of adaptation to physical training were the accelerated rates of physical development that is important today at introduction of delivery of obligatory norms of GTO.

2. **The used technical means**

The electronic version of the monograph works in a graphical operational environment of Windows*. For acquaintance to contents of the monograph of rather personal computer to the Intel 486 processor above.

**3. Special conditions and requirements of organizational, technical and technological character**

Are not required.

**4. Conditions of transfer of program documentation or its sale**

Condition of transfer of this software product is the contract of purchase and sale signed between the Sterlitamak branch of the Bashkir state university and interested party.

## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic Educational and Methodical Grant "Philosophy" for Students of All Specialties of All Forms of Education"

*Sterlitamak branch of Federal public budgetary educational institution of the higher education "Bashkir state university"*
*SHergeng N.A., Nafikova A.I.*

***UDC** 378*
***GRNTI** 14.34.07, 02.01.20*

**1. Functional purpose of a product, scope, its appointment**

Independent work of students is one of the most important components of educational process which basic principle of the organization is the integrated approach. Independent work promotes deepening and expansion of knowledge of students, formation of interest in cognitive activity, mastering methods of process of knowledge. And independent work of the student becomes the main reserve of increase of efficiency of training of modern experts.

Electronic educational and methodical grant for independent work of students of all specialties of all forms of education on discipline "Philosophy" has theoretical and practical value. The present edition included the materials promoting formation of skills of reproductive and creative activity of the student in audience at out-of-class contacts with the teacher, by house preparation.

The discipline "Philosophy" belongs to a humanitarian, social and business cycle of disciplines (basic part) of the Federal state educational standard of higher education in the direction of preparation "030900.62 Law", profiles of preparation "State and legal", "Civil".

The knowledge, skills received during studying of discipline have to be used by students comprehensively: at all grade levels in higher education institution; during further training in a magistracy.

The software product contains necessary materials for independent work of students on the subject "philosophy".

Material is stated in the form of test tasks, practical questions for judgment, sources on philosophy. Thanks to ergonomic design for independent work of students of all specialties of all forms of education" on discipline "Philosophy" pleasantly and comfortably to work with an electronic educational and methodical grant.

The edition includes the structured material:

Title page

Introduction

Part I. Test material, with the questions of the closed type assuming the choice of one or several versions of the answer;

Part II. Question-answer tests. The design of such tests assumes fixing of the correct answer by the student.

Part III. Work with primary sources. Excerpts from works of the famous philosophers of antiquity, the Middle Ages, Modern times, the Present, and a task for creative judgment and the analysis of texts are offered students.

Part IV. Answers to parts I, II

The electronic "educational and methodical grant for independent work of students of all specialties of all forms of education" on discipline "Philosophy" is presented in the form of separate parts of the tasks allowing the student to study all block of the questions studied within this discipline.

Development stages of an electronic "educational and methodical grant for independent work of students of all specialties of all forms of education" on discipline "Philosophy"

1) inspection of object and justification of need of creation of an electronic "educational and methodical grant for independent work of students of all specialties of all forms of education" on discipline "Philosophy"

2) systematization of a training material;

3) creation of the hypertext version of an electronic "educational and methodical grant for independent work of students of all specialties of all forms of education" on discipline "Philosophy" on the basis of the HTML language;

4) studying of the existing analogs of an electronic "educational and methodical grant for independent work of students of all specialties of all forms of education" on discipline "Philosophy";

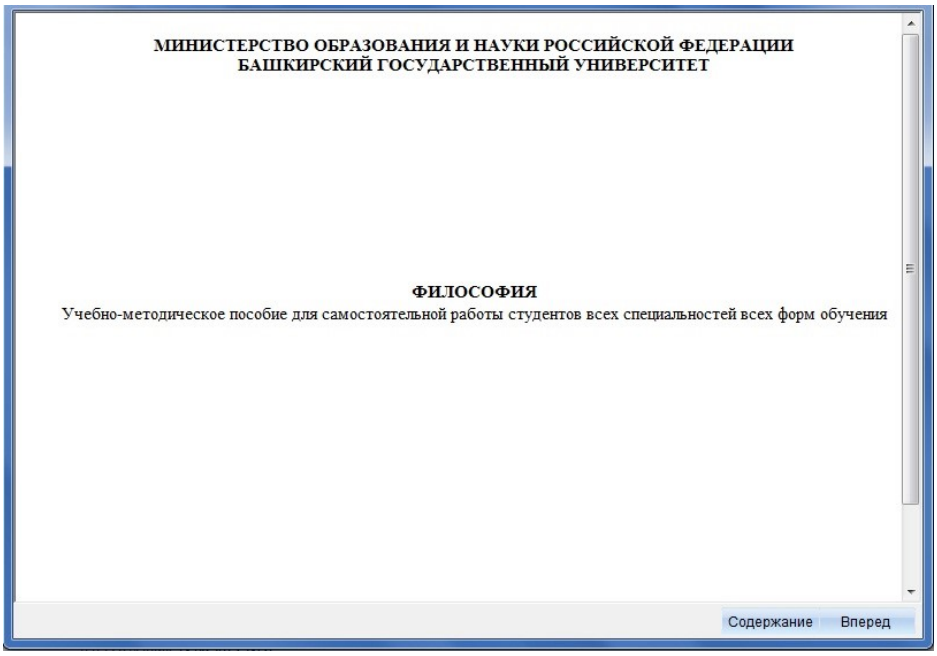
5) creation of objects of interactive virtual demonstration installations, development of design means of computer graphics;

6) development of the ergonomic, comfortable interface of the user, by means of the software of AutoPlay Media Studio 8.0.7.0.

The user interface provides comfortable interaction of the user with the software product. The interface of system is clear and convenient in use, conforms to modern ergonomic requirements.

Screenshots of an electronic "educational and methodical grant for independent work of students of all specialties of all forms of education" on discipline "philosophy" are given below

1

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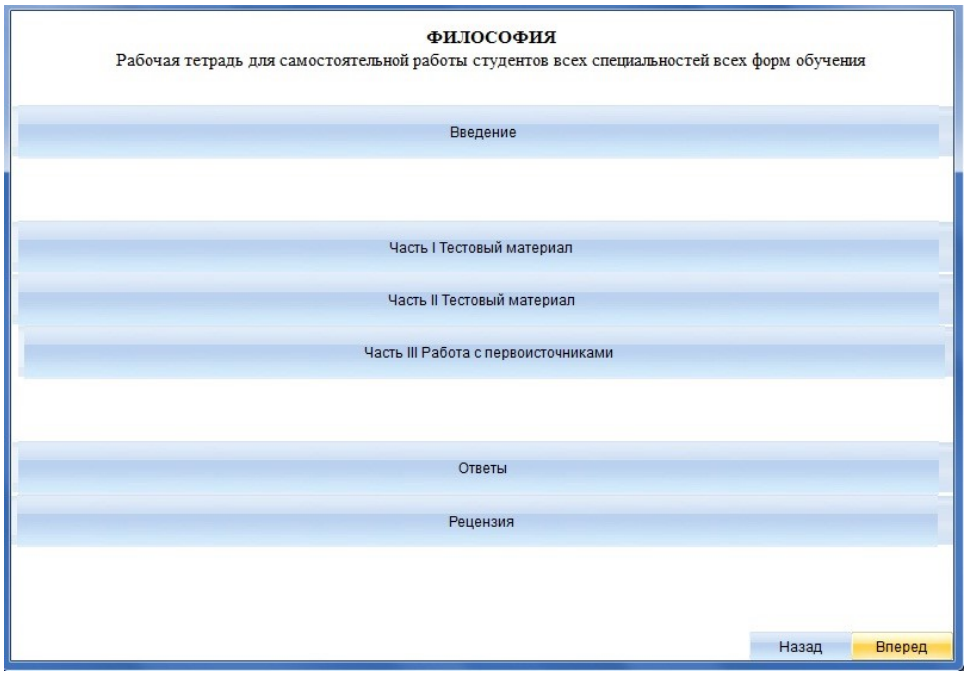


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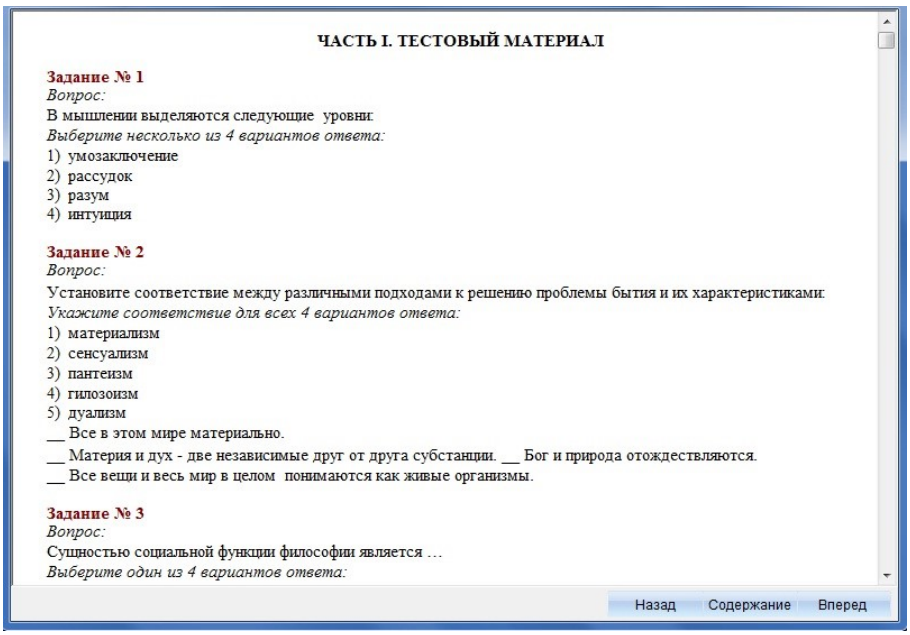



**2. The used technical means**

Electronic "educational and methodical grant for independent work of students of all specialties of all forms of education" on discipline "philosophy" it is created with use of the software of AutoPlay Media Studio of version 8.0.7.0.

Text information is created when using the Microsoft Office package 2007.

The electronic educational and methodical grant for independent work of students of all specialties of all forms of education on discipline "philosophy" can be used both at independent studying of disciplines, and on occupation under the leadership of the teacher when studying material.

The purpose of independent work of students consists in full assimilation of a training material and in development of skills of self-education through work with scientific literature and the primary sources necessary for profound studying of philosophy, and also development in them of steady abilities to independent (without the assistance of the teacher) to studying, a statement and application of the obtained information.

**3. Special conditions and requirements of organizational, technical and technological character**

Electronic "educational and methodical grant for independent work of students of all specialties of all forms of education" on discipline "philosophy" belongs to necessary conditions of application of the edition: existence of the Intel Pentium computer above; 20 Mb of free disk space; Windows XP OS above; software of Flash Player of version 8.0 above.

**4. Conditions of transfer of documentation or its sale**

Condition of transfer of this software product is the contract of purchase and sale signed between the Sterlitamak branch of the Bashkir state university and interested party.

## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic manual "Taxation Bases at the Present Stage" (direction: "38.03.01 - Economy", "38.03.02 - Management" and "38.03.04 - the Public and municipal administration"; level - a bachelor degree)"

*VO FGBOU Sterlitamak branch Bashkir state university*
*Ibragimova G.M.*

***UDC*** *378*
***GRNTI*** *14.35.07, 06.73.15*

**1. Functional purpose of a product, scope, its appointment**

In modern conditions when in the system of the higher education electronic resources began to be applied actively actual there is a problem of reconsideration of process of the organization of educational process and process of management of education, process of transfer of the systematized knowledge, skills and abilities and creation of new methods and technologies of training. Continuous increase in volume of information and limitation of school hours cause need of an intensification of training, development and deployment of the nonconventional technologies which are based on use of technical means with application of active methods of training in all their variety and complexity.

The electronic manual "Taxation Bases at the Present Stage" represents a summary of the course "Taxes and Taxation".

Taxes play an important role in activity of the state and all economic subjects. Need of taxes is caused by requirements of social development. Taxes are the main source of receipts in the state budget and, therefore, the main source of resources for a covering of nation-wide expenses on satisfaction of public requirements.

In modern conditions increased requirements to experts in the field of economy are imposed. The knowledge of the main questions of the taxation becomes a factor of successful professional activity. The knowledge of bases of the taxation is necessary as to employees of manufacturing enterprises, financial credit institutions and organizations, and bodies of the public and municipal administration as the tax system of any state has significant effect on all parties of financial and economic activity.

The electronic manual is directed to giving theoretical ideas of taxation bases, an order of calculation and payment of the taxes and fees raised in Russia at the present stage of development. As a result of development of a training material a complex impression about bases of tax system of Russia, features and shortcomings of the existing tax mechanism, the mechanism of calculation and payment of taxes, collecting and other similar payments has to be gained.

The complexity and complexity of the legislation characteristic of modern Russian tax system, unfortunately, does not allow to use only one act at calculation and payment of taxes. In most cases it is necessary to use provisions of several acts. Therefore, in this electronic educational a grant attempt to synthesize various sources in one scientific work was made.

The electronic manual can be used for achievement of the greatest productivity when studying the course "Taxes and Taxation". The maintenance of subjects in the electronic manual shorter than in printing options of similar grants.

Possibilities of the electronic manual as much as possible reveal during the independent work of students as all necessary information for development of discipline is collected in one place and students should not spend time for search of this material in various sources. Besides, the student can check how he acquired this material as the electronic manual, contains test tasks for examination.

In cases if check showed bad results, then as a result of the analysis, it is possible to reveal gaps in knowledge and to study badly acquired material. The electronic manual completely corresponds to the training program and settles down on the digital material carrier. It can be used along with the traditional textbook, but at the same time increase efficiency of educational process.

This electronic grant is intended for independent studying of a training material on taxes and the taxation, and also for support of development of a course by students for the purpose of its profound studying. By means of this grant students will be able to seize theoretical and legislative bases of system of the taxation in the Russian Federation at the present stage.

The electronic manual will allow to use more optimum all tutorials which are available in a modern technique. The electronic manual will be useful for students by preparation for a practical training, for examination and when writing a term paper.

This electronic manual is intended for students of all forms of education which are trained in the 38.03.01-Economy, 38.03.02-Management and 38.03.04-the Public and municipal administration direction.

The electronic manual "Taxation Bases at the Present Stage" is the complex multimedia educational edition allowing to organize systematic studying of the course "Taxes and Taxation".

This electronic manual is under construction by the modular principle and include three sections:

- theoretical part. At the heart of this part the text contains;
- control part. Contains a set of tests, control questions by theoretical part;
- help part. Includes the dictionary of terms.

The theoretical part includes 19 subjects which are presented in the form of slides in the MS PowerPoint program.

The first subject is devoted to theoretical and legislative bases of concept a tax and tax system (fig. 1):

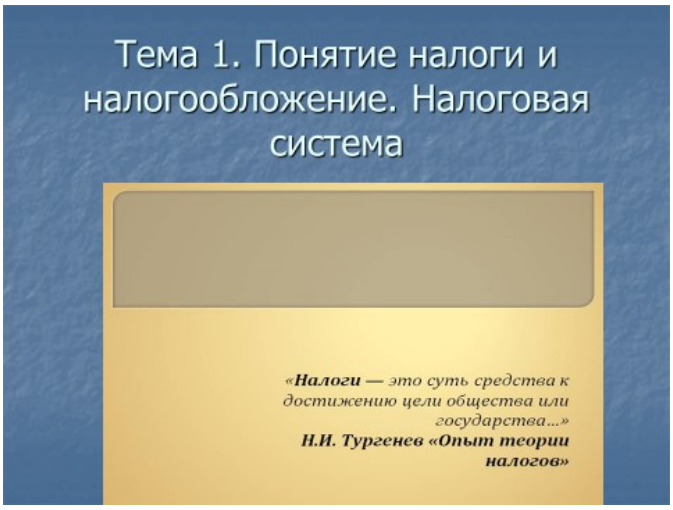



Fig. 1. Subject 1. Concept taxes and taxation. Tax system

Subjects with 2 on 10 are devoted to an order of calculation and payment of federal taxes (fig. 2):

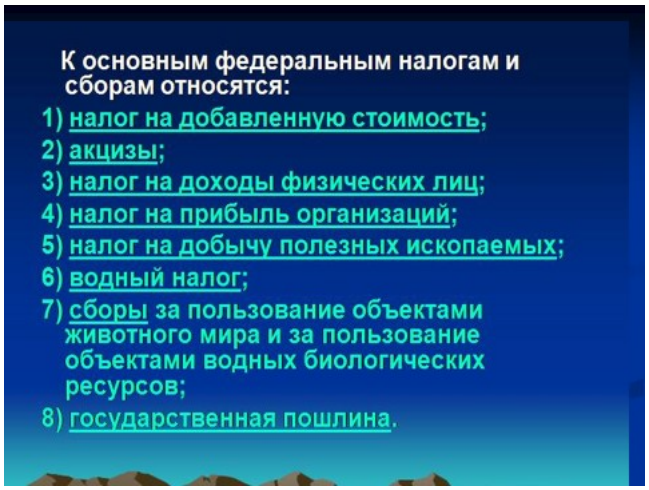



Fig. 2 Federal taxes and fees

Subjects with 11 on 13 reflect an order of calculation and payment of regional taxes (taxes of territorial subjects of the Russian Federation) (fig. 3):

Fig. 3. Regional taxes

Subjects 14 and 15 reflect an order of calculation and payment of local taxes (fig. 4)

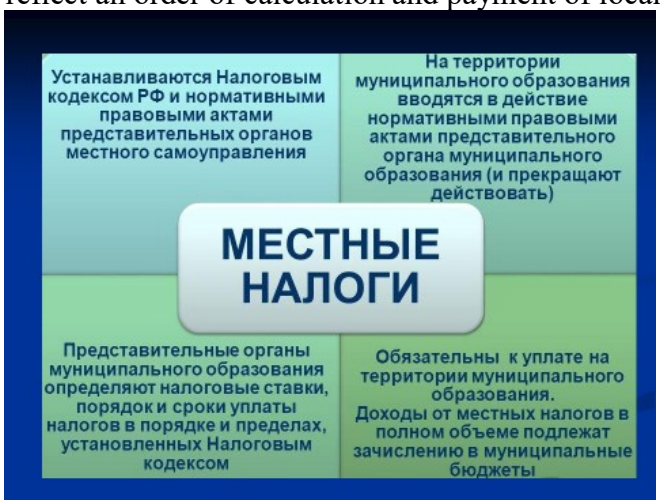



Fig. 4. Local taxes

Subjects with 16 on 19 are devoted to an order of application of the special tax modes in the Russian Federation (fig. 5):

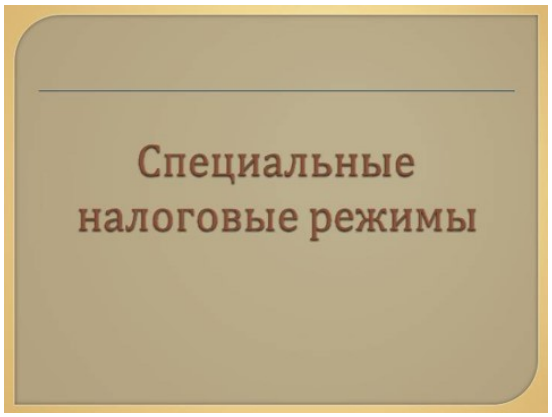



Fig. 5. Special tax modes

Except the above in control part (2 section of a grant) of the electronic manual tests for examination on all subjects are submitted.

In the third section – dictionary part definitions of the main terms used in the taxation are given.

The electronic manual "Taxation Bases at the Present Stage" can be used both at independent studying of discipline, and on occupation under the leadership of the teacher when studying material.

The purpose of independent work of students consists in full assimilation of a training material and in development of skills of self-education through work with scientific-theoretical literature and the practical materials necessary for studying of the course "Taxes and Taxation",

and also development in them of steady abilities to independent (without the assistance of the teacher) to studying, a statement and application of the obtained information.

**2. The used technical means**

The electronic manual "Taxation Bases at the Present Stage" it is created with use of the software **of Microsoft Office**.

**3. Special conditions and requirements of organizational, technical and technological character**

Treat necessary conditions of application of the electronic manual "Taxation Bases at the Present Stage": existence of the computer. Existence of the computer with OS WINDOWS XP/7/8, MS PowerPoint belongs to operating conditions of a resource.

**4. Conditions of transfer of documentation or its sale**

Condition of transfer of this software product is the contract of purchase and sale signed between the Sterlitamak branch of the Bashkir state university and interested party

## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic educational and methodical complex "Numerical methods. The theory, algorithms, programs" (the direction of preparation 44.03.01 – "Pedagogical education", level - a bachelor degree)"

*SHevchenko G.I., Kulikova T.A.*

***UDC** 378*
***GRNTI** 14.35.09, 27.01.45*

**1. Functional purpose of an electronic educational and methodical complex "Numerical methods. Theory, algorithms, programs", area of its application, its appointment and restrictions**

Electronic Educational and Methodical Complex (EEMC) "Numerical methods. The theory, algorithms, programs" it is developed for students 4 courses which are trained in the direction of preparation 44.03.01 – "Pedagogical education", preparation profiles – "Informatics", "Informatics and information technologies in education" qualification (degree) of the graduate – "the academic bachelor".

Discipline "Numerical methods. The theory, algorithms, programs" are included into the list of disciplines IN programs of a bachelor degree for the direction of preparation "Pedagogical education". EUMK is developed according to requirements of FGOS IN the third generations which declare competence-based approach to the organization of the higher education for the different directions and specialties, shown to software products of this kind.

Relevance of EUMK "Numerical methods. The theory, algorithms, programs" is caused by need of development, justification and realization of use of methods of the approximate solution of various tasks which execution is connected with application of computer facilities and programming.

The purpose of EUMK is fundamental training of students in the field of use of opportunities of systems of computer mathematics for the solution of the tasks by numerical methods forming all-professional, professional and special competences at students.

The electronic materials of educational appointment which are a part of EUMK "Numerical methods. The theory, algorithms, programs" are developed with use of the visual designer of Incomedia WebSiteX5 providing export of the website or direct placement to the Internet. As one of ways of export of the website is a saving the project on a local disk of the desktop computer (i.e. the project ready to unloading in a network).

The developed complex can be used at internal, correspondence and remote forms of education.

It is possible to carry the following to advantages of the developed complex:

– all EUMK elements are interconnected and have a uniform information basis and the hardware-software environment;

– possibility of use of EUMK as in the local and distributed computer networks of higher education institution, and at remote form of education;

– EUMK provides a possibility of modeling of technical and organizational conditions of performance of various operations and works characteristic of this direction of preparation.

Overall performance in EUMK is reached because

– the structure of educational occupation changes, are instructed, the ordering actions of students;

– knowledge is not imparted in finished form, and vigorous cogitative activity will be organized, creative activity and independence of students develops, availability of training and rate of a statement of program material increases;

– fatigue of students decreases, observed keen interest in occupation, time for independent work increases;

– the possibility of purposeful pedagogical impact on nature of the formed competences, on performance of various tasks, development of rational forms of the organization of educational work is provided.

Structure, operating modes and conditions of application of EUMK

EUMK "Numerical methods. The theory, algorithms, programs" consists of five modules: program of discipline, lecture, practical work, glossary, tests (fig. 1).

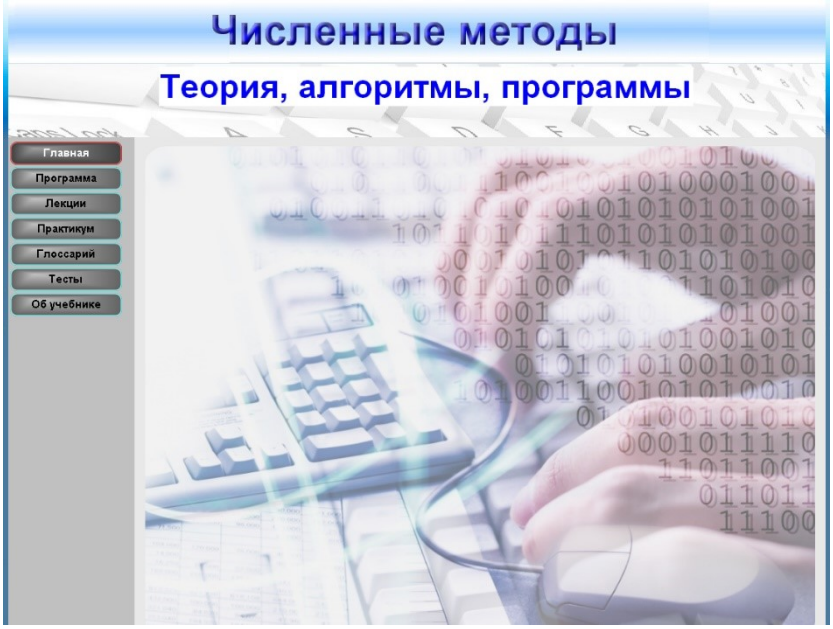



Fig. 1 – Structure of EUMK "Numerical methods. Theory, algorithms, programs"

Components of a complex represent a set of the files of the small size united by the general navigation system which is carried out by means of buttons or hyperlinks. Availability and simplicity of navigation does not demand special preparation, allowing to concentrate attention trained on the content of the offered material.

The Program module contains: purpose and problems of development of discipline; the place of discipline in structure of OP; communication of discipline with the previous and subsequent disciplines; the list of competences trained, formed as a result of development of discipline, and the planned levels of formation of competences, the name and content of lectures; name of laboratory works; methodical recommendations for students about studying of

discipline; passport of fund of estimated means; educational and methodical and information support of discipline.

The Lectures module contains theoretical material which is stated substantially, laconically and well, with convenient navigation (fig. 2).

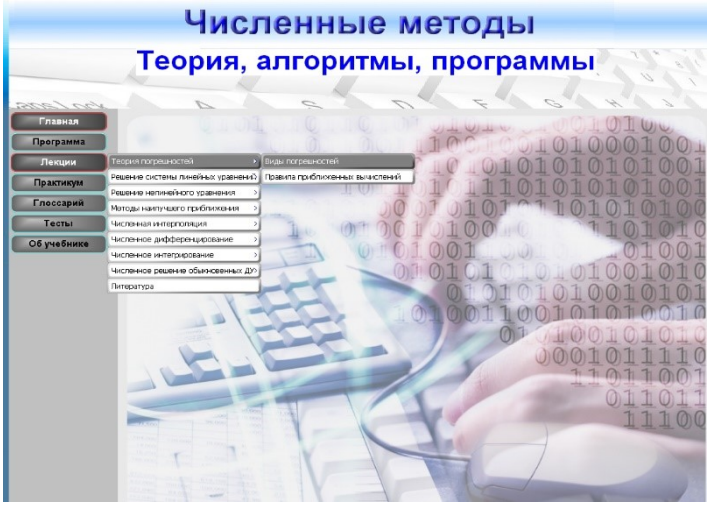



Fig. 2 – Contents of the section "Lectures"

The Practical work module contains a list of laboratory works (fig. 3).

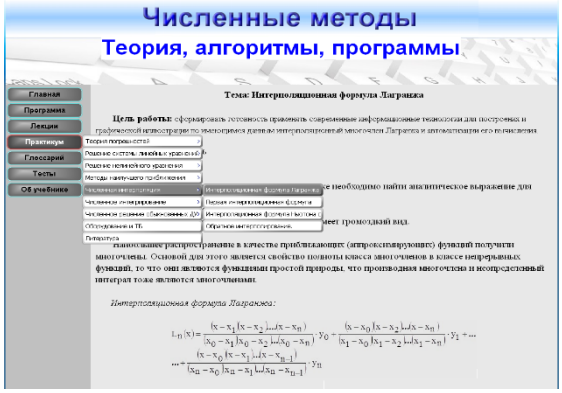



Fig. 3 – Contents of the section "Practical work"

Structurally each of works, in the offered grant, consists of a summary of the theoretical material necessary for its performance, the example based on this theoretical material, a technique and an order of performance of laboratory work, tasks of the basic and increased levels, questions and test tasks for control of possession of competences.

The Tests module allows to realize entrance, current and total types of control, to systematically carry out a reflection with the trainee, revealing extent of digestion of the studied material, and in time correcting activity of students (fig. 4).

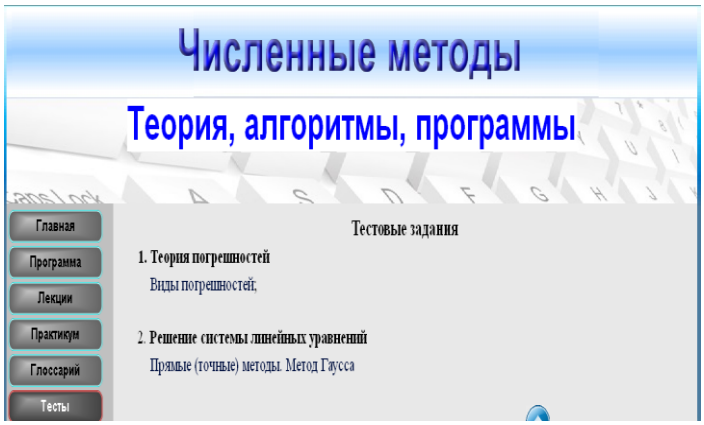



Fig. 4 – Maintenance of the Tests module

The Glossary module contains index of the terms and the basic concepts used when studying discipline "Numerical methods. Theory, algorithms, programs".

EUMK allows to supplement and combine laconically traditional methods of training with innovative, using modern means of information and communication technologies. The individual and differentiated approaches used when studying discipline give an opportunity to the teacher objectively to estimate quality of knowledge of everyone.

**2. The used technical means**

Electronic educational and methodical complex "Numerical methods. The theory, algorithms, programs" represents the web document and contains HTML pages, graphic files, Java scripts, cascade stylesheets (CSS) etc.

Electronic the materials of educational appointment which are a part of EUMK are developed with use of the visual designer of Incomedia WebSiteX5 and represents the complete training program.

**3. Special conditions and requirements of organizational, technical and technological character**

EUMK "Numerical methods. The theory, algorithms, programs" it is optimized for use in an operational environment of Microsoft Windows HR, 7, 8 by means of the Microsoft Internet Explorer program of version 7.0 above at a display resolution from 800x600 points above. For display of pages the cursor of visualization of IE is used. It guarantees that everything is displayed without distortions and with support of all opportunities of Internet Explorera.

**4. Conditions of transfer of program production or its sale**

Condition of transfer of this software product is the contract of purchase and sale signed between FGAOOU WAUGH "The North Caucasian federal university" and interested party.

## ADVERTISING AND TECHNICAL DESCRIPTION "The Electronic Resource "Mathematical Modelling of the Software Market" (the Direction 231000.62 — Program Engineering, a Profile — a Bachelor Degree)"

*Volga polytechnical institute (branch) of federal public budgetary educational institution of the higher education "Volgograd state technical university"*

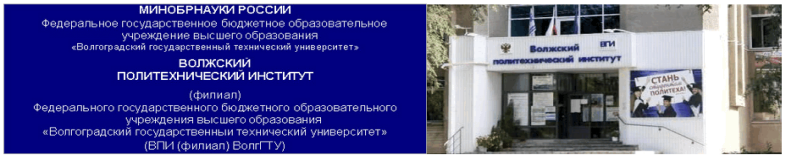
*Korotkova N.N., Rybanov A.A., Sviridova O.V.*

***UDC** 378*

***GRNTI** 14.35.07, 27.21.17, 77.03.06*

**1. Functional purpose of a product, area of its application, its appointment**

The electronic resource "Mathematical Modelling of the Software Market" is the manual and contains electronic and text data.




Электронная библиотека студента О диске

Электронный ресурс

**Н.Н. Короткова, А.А. Рыбанов, О.В. Свиридова**

**Математическое моделирование рынка программного обеспечения**

Волжский

2016

The electronic manual is developed according to requirements of Federal state standard of higher education and intended for the students of a bachelor degree who are trained in the Program Engineering direction. A scope of this electronic resource is educational process at the Volga polytechnical institute (branch) of the Volgograd technical university, any students of the Program Engineering and Informatics and Computer Facilities directions can act as object of training. The electronic manual is recognized to provide interaction of the student with the training material offered by the teacher, allowing to work as independently, and in audience by means of the last. (1 file: 672 CBs).

МИНОБРНАУКИ РОССИИ
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«Волгоградский государственный технический университет»
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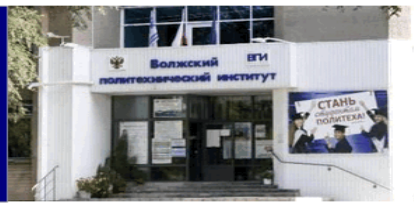


**Электронная библиотека студента** **На главную**

УДК. 330.115

Рецензенты:
Профессор кафедры «Автоматизация технологических процессов и произ-водств» филиала НИУ «Московский энергетический институт (техниче-ский университет)» в г. Волжском, доктор техн. наук Шевчук В.П.
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**О диске**

Издается по решению редакционно-издательского совета Волгоградского государственного технического университета

Все права на размножение и распространение в любой форме остаются за разработчиком.

Нелегальное копирование и использование данного продукта запрещено.

Короткова, Н.Н.**Математическое моделирование рынка программного обеспечения**[Электронный ресурс]: учебное пособие/ Н.Н. Короткова, А.А. Рыбанов, О.В. Свиридова // Электрон. текстовые дан.(1 файл: 672 КБ) – Волжский: ВПИ (филиал) ВолгГТУ, 2016г. – Систем. требования: Windows 95 и выше; ПК с процессором486+;CD-ROM. – свид. о регистрации №

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Содержит сведения о моделях постащиков аппаратного и программного обеспечения, а также о моделях производителей коммерческого и некоммерческого программного обеспечения. Изложены задачи, стоящие перед производителями аппаратного и программного обеспечения, проанализированы модели постащиков и производителей программного обеспечения с использованием аппарата теории оптимального управления. Рассмотрены статистические данные объемов продаж программного обеспечения и влияние распространения пиратских копий на производителей программных продуктов.
Пособие рассчитано на студентов дневной и заочной формы обучения направлений 230100.62 «Информатика и вычислительная техника» и 231000.62 «Программная инженерия».

**Ключевые слова**: Моделирование, программное обеспечение, дуополия

**Зарегистрирован** в ОФЕРНиО (Объединенный Фонд Электронных Ресурсов "Наука и Образование") (www.ofernio.ru)

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The electronic resource "Mathematical Modelling of the Software Market" is the main training material on discipline "Economy of program engineering".

Data on models of suppliers hardware and the software, and also about models of producers of the commercial and noncommercial software are provided in an electronic grant.

In a grant the tasks facing producers hardware and the software are stated, models of suppliers and producers of the software with use of the device of the theory of optimum control are analysed, statistical data of sales volumes of the software and influence of distribution of piracy copies on producers of software products are considered.

The real electronic grant aims - formation at the bachelor of necessary knowledge concerning the general representations and the principles of the mathematical description of model of interaction of two competing suppliers of operating systems (Microsoft and Linux) with the exclusive producer of hardware (Intel), model of interaction of two competing suppliers of hardware (Intel and AMD) with two competing suppliers of operating systems (Microsoft and Linux), market models of hardware, commercial and noncommercial operating systems taking into account distribution of piracy copies commercial and a noncommercial operating system, acquaintance with methods of use of these models in practical activities, disclosure of economic essence of supply and demand of equipment rooms and software, and also the equilibrium price of these products, with the subsequent application of the gained knowledge in practice. The main objectives of the manual are: the help to students in studying of essence of concept of the software market, laws of interaction of suppliers and consumers of equipment rooms and software, conclusions about division of the software market between users of license copies of the commercial Windows operating system, piracy copies of the Windows operating system and

the noncommercial Linux operating system, mathematical methods, including mathematical modeling and the statistical analysis.

The electronic resource "Mathematical Modelling of the Software Market" helps students of the specialties "Program Engineering" and "Informatics and Computer Facilities" with studying of theoretical bases of modern models of the market relations in the field of hardware and the software, means of statistical information processing for the analysis of a situation on a sales market of software.

The electronic resource "Mathematical Modelling of the Software Market" allows, using the gained knowledge in practice, to make the domestic market of software more effective and competitive.

**2. The used technical means**

The electronic resource "Mathematical Modelling of the Software Market" on discipline "Economy of program engineering" was created with use of language of a hypertext marking of HTML and does not demand additional installation.

During creation of the electronic edition "Mathematical Modelling of the Software Market" the following technical means were used: the computer with Windows XP OS, the software of MS Word and the visual HTMLReader HTML editor of version 2.5.

**3. Special conditions and requirements of organizational, technical and technological character**

Treats necessary conditions of use of the electronic edition - existence of the personal computer with the processor 486+, Windows 95 OS above with the software Web Browser (Firefox, Opera, IE, etc.), CD ROM. The browser of PDF of documents is necessary for viewing of electronic resources.

**4. Conditions of transfer of documentation or its sale.**

All rights for reproduction and distribution in any form remain for the developer.

Illegal copying and use of this product is forbidden.

On all questions it is necessary to address to the Volga polytechnical institute (branch) of VOLGGTU

Address: Russia, 404121, Volgograd Region. Volzhsky, st. of Engels, 42a

Phone: 8 (8443) 221956

Email: library@volpi.ru

## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic Textbook and Workshop on a Course of Krosskulturny Management (Direction 38.03.02 Management (Bachelor Degree), 38.04.02 Management (Magistracy))"

*Dolyatovskij L.V., Gamalej K.YU., Dolyatovskij V.A., Dolyatovskij D.V., Sushchenko L.G.*

***UDC** 378*
***GRNTI** 14.01.11*

**1. Functional purpose of the program, area of its application, restriction**

In modern conditions of activity the manager has to work in the polycultural environment, in group of workers with different cultural traditions and features. Therefore in management new sections are created: the international management studies work in the multinational companies, comparative - features of management in the different countries, krosskulturny-management in polycultural collectives. The purpose of the electronic textbook and a practical work "Krosskulturny management" - training of the manager in methods of adaptation to the new cultural environment and management of multinational polycultural collectives. On the basis of studying of this course the manager can increase efficiency of the work, avoid krosskulturny shocks and organize effective work of multinational collectives.

The electronic textbook and workshop on krosskulturny management is pioneer and original development of the textbook of the such, constructed on the principles constructive ontology: at first the model of subject domain of krosskulturny management in the form of a semantic network is studied and under construction, then elements of knowledge for the solution of applied problems of management in the polycultural environment are defined. The program system is intended for studying of features of management in the polycultural environment and obtaining practical skills of management of difficult groups of workers.

The program system is constructed by the modular principle and contains knowledge methods of the organization of group work on the basis of knowledge of processes of group dynamics and the principles of formation of team, studies various ways of permission of conflict situations, the analysis and design of interpersonal, group and organizational communications. The methods and models given in the textbook and a practical work allow to develop strategies of management of human resources of the organizations, to plan and carry out the actions directed to its realization (professional competence PK-13); to apply modern technologies of human resource management (PK-14). The student on the basis of studying will own: ability to effectively organize group work on the basis of knowledge of processes of group dynamics and the principles of formation of team (PK-5); in various ways of permission of conflict situations (PK-6); ability to the analysis and design of interpersonal, group and organizational communications (PK-7); ability to participate in development of strategy of management of human resources of the organizations, to plan and carry out the actions directed to its realization (PK-13); - to own modern technologies of human resource management (PK-14). The module 1" Ontologic approach to krosskulturny management" includes problems of krosskulturny management and a problem of cross-cultural interaction, communication of tasks with subject domain and necessary elements of knowledge. On this basis the subject domain of krosskulturny management is formed and the general logic of management of krosskulturny interactions is defined. In the section of formation of tolerant behavior methods of the analysis of system of the values aiming cultural processes, and their influence at the economic development, distinctions of the organizations in the different countries, sociocultural factors and their influences, a human factor in work of the organization, motivation, formulas of successful management, krosskulturny shock and its manifestations are studied. Asymmetry of information and theoretical approach to overcoming of krosskulturny shock, the organization of effective interactions of representatives of different cultures are defined.

In the module 2 "Activity of the manager in the new cultural environment" systematization of cultural features in management, estimates of system of values of the nations and the characteristic of mentality, the accounting of national traditions in behavior and work in other cultural environment are considered. Bartlett's researches, system of actual and desirable values, rules of conduct are given in different cultures, anticipation and estimates of consequences of decision-making. The attention is paid to features of mentality and the law of compliance of system of management to mentality of the nation is defined. Researches and diagnostics of sociocultural features of G. Hofshtede and R. Inglkhart, profiles of characteristics of the nations, display of lines of mentality are given in a profile of system of management, formation of behavior taking into account features of mentality, sociocultural clusters and their features, the principles of tolerant behavior in different clusters. The practical work includes the analysis of influences of values on economy and effect of work of the organizations, the organization of the analysis of lines of mentality on the basis of design of questionnaires and their processing, the analysis of the krosskulturny relations is carried out, examples of formation of the relations of representatives of different cultures, rules of conduct in different environments are studied.

Lines of mentality come to light on a basis. semantic differential, the profile of mentality is under construction and the system of values is allocated, methods of management of the conflicts on the basis of the accounting of lines of mentality are defined. At the conceptual level classification of the countries by the prevailing values is realized, are analyzed. results of

researches of R. Inglkhart, trajectory of development of the countries. Problems of creation of system of management on the basis of characteristics of mentality of the nation are solved, matrix representation of mentality and creation of display of its properties to lines of management is formed.

On the basis of data the statistical analysis of influence of sociocultural values on economy indicators is carried out, portraits of the nations of G. Hofstede and economic tables of A. Madison are applied to the analysis of influence of values on development of economy, indicators of sensitivity of economy to values of people are defined. The structure of the electronic textbook and a practical work is presented in fig. 1.

Drawing 1-Block diagram of the electronic textbook and practical work

The program system turns on two modules: 1) the module 1 forms model of subject domain in the form of a semantic network, the module 2 systematizes and at the program level realizes tools of the practical solution of problems of krosskulturny management in the form of statements of tasks and methods and algorithms of their decision.

Results of processing of empirical data are output to the monitor or the printer and characterize rational decisions of the manager in various situations considered by krosskulturny management.

Thus, the program complex gives the chance to receive objective characteristics of situations in a control system and to make reasonable decisions on increase of system effectiveness of business management.

**2. The used technical means**

Program modules for the analysis of situations of krosskulturny character in control systems of the organizations, calculation of indicators of productivity and distribution of works on divisions, groups and employees and functional reliability of data processing, dynamics of processes of performance of tasks and decision-making are written in language of Delfi, consist of program blocks, use the built-in subprogrammes of calculations of the statistical moments and laws of distribution of indicators. Criteria a chi-square are applied to definition of theoretical laws of distribution of empirical data, for check of hypotheses Styyudent's t-criterion is used. A number of formulas of calculation of indicators of quality and efficiency of standard decisions is taken from help works on calculation of reliability of the person technician systems, a number of formulas is removed by authors. Problems of search of optimal solutions at the choice of

characteristics of divisions and groups of workers are solved by authors (are described in V. A. Dolyatovsky's book "Comparative management - Rostov - on - Donu:izd. RGEU,2009). Program modules are placed on a compact disk therefore for work the personal computer with the disk drive or reading of files about a flash card is necessary. Random access memory of the personal computer has to be 1-2 GB, the Windows-7 or Windows-10 operating system. For work loading of the compiler of language of Delfi is necessary. At the addressing the program the main menu containing modules of the program and instruction on the entered data which the user can address by preparation and input of initial files opens. After input of the required data the corresponding module of the program is started and data processing is made.

**3. Special conditions of application and requirement of organizational, technical and technological character**

For use of the electronic textbook and a workshop on a course of krosskulturny management on the computer the Microsoft Internet Explorer browser has to be installed. The compiler of language of Delfi then modules of the program are loaded has to be loaded into the computer and by means of the manipulator of a mouse the main menu with indications of modules opens. The user chooses the program module interesting him, specifies basic data and starts the program module of their processing. If necessary the user corrects data in case his estimates do not coincide with standard. In need of expansion of opportunities of statistical processing of experimental data the user can use subprogrammes of processing in language of Delfi. Data processing, the collected questionnaires of inspection of values and estimates of workers placed in base it is better to carry out consistently, but it is possible to organize the selective analysis of data.

**4. Conditions of transfer of program documentation or its sale**

The developed electronic textbook and workshop on a course of krosskulturny management is original development and a commercial product. The complex was used in processes of administrative consultation of eight enterprises, on the basis of the developed recommendations reengineering of management of the enterprises was carried out. The program complex can be provided to everyone after payment on the Internet of costs of its creation and distribution. Conditions of transfer can be specified at the address to authors.

## ADVERTISING AND TECHNICAL DESCRIPTION "Educational Content " the Theory of the Organization " (the Direction of Preparation 38.03.02 — Management, a Profile — a Bachelor Degree)"

*Kemerovo institute (branch) of federal public educational institution of the higher education "Plekhanov Russian Academy of Economics"*

*Tabashnikova O.L.*

***UDC 378***

***GRNTI** 14.35.07, 06.61.53*

**1. Functional purpose of development, scope, its restrictions**

Educational content for remote development by students of discipline "The theory of the organization" and successful passing of rubezhny control by them is created taking into account opportunities to work in the environment of LMS Moodle and contains the following elements of the training system:

1. The general information on discipline which includes "A parenthesis of the teacher";
2. Working program;
3. Training and educational and methodical materials which part the following elements are:

- methodical instructions on studying of discipline "The theory of the organization",
- abstract of lectures on the Theory of the organization;
- list of textbooks;
- the presentations according to sections and subjects of a course.

4. Practical tasks (approximate scope of examinations, subject of the essay).

5. The control questions including the questionnaire according to sections and subjects of a course and test tasks for preparation for offset, and also the final interactive test.

In the specified structure the offered educational content for remote development by students of discipline "The theory of the organization" is submitted as the complete, intellectual, training system.

The success of functioning of any modern organization in essential degree is defined by efficiency of its management which, in turn, depends on quality of management of organizational processes, subsystems and the organization in general. It causes the importance of a subject matter "The theory of the organization", defines its place and a role in educational process as the theory of the organization gives an idea of the organization as of superdifficult open dynamic system, its main subsystems and processes, laws and the principles of its existence and development, and also of the characteristics of environment influencing result of its activity.

Theories of the Organization value as sciences consists in definition of factors, the principles, laws of existence of the organizations, and also development of forms, methods and conditions of their effective design, functioning and development.

"The theory of the organization" is the discipline purpose formation at the students who are trained in the direction of preparation 38.03.02 MANAGEMENT (bachelors of management, economy and business management, and also bachelors on management of real estate objects), systems of knowledge of design, a structure, functioning and development of social and social and economic organizational systems, features of management of the processes proceeding in them, including the regularities and problems arising on each of stages of life cycle of the organization.

The main objectives of studying of discipline are:

- judgment of ways of the organization of human activity;
- systematization of organizational experience;
- illumination of methodological bases of the organization as systems;
- the analysis of the processes proceeding in organizational systems;
- studying of features of design, construction and functioning of the social organizations;
- establishment of tendencies and regularities of development of the social organizations;
- definition of a role of the organization in life of society and the individual.

Object of studying of discipline are the social organizations, and also organizational experience of mankind.

The phenomena and processes proceeding in the organization, actions of an organizing and disorganizing orientation and also the organizational relations or communications and interactions between different social organizations and their components act as a subject of studying.

As basic method of discipline it is possible to consider the system approach on a dialectic basis allowing to consider the studied objects in "dynamic balance".

"The theory of the organization" is an introduction course for the subsequent studying of specialized disciplines – such as "Strategic management", "Innovative management", "International management", "Business planning", etc. In the course of development of the theory of the organization students have to get acquainted, first of all, with future object of management – the organization, that is to cover theoretical basics, laws, the principles and regularities of construction and functioning of the organization as systems, including the economic and methodological principles of its analysis, use of the studied regularities for design

and creation of optimum structures of the organization, to study its main kinds, laws, the principles of functioning, etc.

Proceeding from this prerequisite, it is possible to formulate main objectives of studying of discipline. The first purpose has mainly applied character: development and free possession of the basic economic concepts and tools of their use in modern organizational and administrative activity. Within achievement of this purpose studying of the following subjects is provided:

- the social and economic organization (organizational typology, features of the informal organizations, structure of external and internal environment of the organization, a role of the organization in life of the individual and society, etc.);
- organizational structures (traditional and modern organizational structures, principles and approaches to their formation, criteria of efficiency);
- organizational culture (basic elements, properties and functions, approaches to formation and adjustment reasons);
- business planning (functions and structure of the business plan).

The second purpose is connected with formation and development in bachelors of management, economy and business management, and also bachelors in management of real estate objects of a certain breadth of vision and professional outlook. Within this purpose students have to learn to understand generality and complexity of the organizational principles, to be able to see regularities and interdependence of the processes happening in the concrete organizations and in modern society in general. The goal means studying of such subjects as:

- history of organizational and administrative thought (historical development of organizational science, main organizational models, bureaucratic model, neoclassical model, professional model, decision-making model, etc.);
- organization as system (general concepts of systems, classification of systems, properties of systems);
- laws of the organization (law of a synergy, law of development; law of self-preservation, etc. basic, auxiliary and specific laws of the organization);
- principles of the organization (principles of rationalization; principles of a statics and dynamics; principles of compliance, etc.).

In the offered educational content for system of distance learning the principles and scientific bases of the theory of the organization consistently are stated, speaks what place is taken by the theory of the organization in system of scientific knowledge; as there was a development of organizing and organizational and administrative thought.

According to a training course students receive the systematized and complex statement of knowledge of what is represented by the organization as system; in what features of functioning of the social organizations as institutional educations consist; what laws regulate activity of the organizations, what mechanisms of their action and algorithms of use; what the principles of the static and dynamic organizations differ in; what the essence of the principles of rationalization consists in.

Inclusion in number of basic concepts of the category "subjects of organizing activity" excludes underestimation of a role of a personal factor in design, creation, development and ensuring steady functioning of the organization, and also in formation of organizational culture.

The concept realized in educational content assumes methodically reasonable development of an optimum set of representations and system characteristics which have to be used in independent work of students for effective digestion of material on the studied discipline.

Offered the glossary is aware assumes a possibility of the choice, along with the sequence offered by the author, any sequence of studying of thematic cycles.

Preparation and writing by the student of the essay and examination are directed to profound studying of separate subjects of discipline, fixing of the gained theoretical knowledge, acquisition of experience of independent work with literature on the theory of the organization, preparation of the bibliography on the chosen subject, writing and protection of the developed theoretical work; formation of skills of analytical and research work; implementation of

intermediate control of knowledge. And writing of the essay is carried out at the request of the student and estimated in "bonus" points (as much as possible – 20 points). The student carries out the choice of a subject independently from the List that essay.

The addressing of the students who are trained remotely the section "Control Questions" which includes the questionnaire according to sections and subjects of a course and test tasks for preparation for offset, and also the final interactive test is expedient, as in the course of studying of discipline "The theory of the organization", and by preparation for total control of knowledge of a course.

Test questions for self-examination, and also questions and tasks for self-checking are grouped in subjects and sections and intended for fuller digestion of the studied material.

The final interactive test is intended for carrying out intermediate certification in the form of offset.

As a result of development of educational content for remote development by students of discipline "The theory of the organization" is created that link in system of studying of a training course and that basis when computer tutorials allow to create the automated environment which is really promoting expansion of the problem field of training in which the possibility not of imposing by the trainee of knowledge, and the help in their finding is created is formed.

**2. The used technical means**

The technical means used during creation of educational and methodical materials it is the Intel Pentium computer, with Windows XP OS and the software of MS Word, PHP, MySQL.

**3. Special conditions of application and requirement of organizational, technical and technological character**

Treats necessary conditions of use of educational and methodical materials - existence of the computer with Windows OS * or Linux with the software Web Browser (Firefox, Opera, IE, etc.).

**4. Conditions of transfer of program documentation or its sale**

Transfer of educational and methodical materials of electronic educational content for system of distance learning on discipline "The theory of the organization" for students of the direction of preparation 38.03.02 Management can be carried out on the basis of contracts. The address for the circulation of rencem@kirsute.ru

## ADVERTISING AND TECHNICAL DESCRIPTION "Educational Content " Economy and Management of Retail Distribution Networks " (the Direction 38.03.02 — Management, a Profile — a Bachelor Degree)"

*Kemerovo institute (branch) of federal public educational institution of the higher education "Plekhanov Russian Academy of Economics"*

*Korobejnikova E.V.*

***UDC** 378*
***GRNTI** 14.35.07, 06.61.53*

**1. Functional purpose of a product, area of its application, its appointment**

Theoretical training is obligatory part of studying of discipline and educational process in general. In modern conditions theoretical training has to be focused on the maximum involvement of students in process of training and is directed to achievement of the following purposes: to involve most fully in educational process at observance of requirements of independence, responsibility and initiative when receiving new knowledge; fixing, deepening and systematization of the training material received on lecture occupations, developments of

practical skills on search and the analysis of information and its further application in research work and in total with a practical training to promote fixing of skills of application of the gained knowledge in practice and the professional growth of future experts.

For more effective organization of educational process, activization of work of students in the conditions of global informatization of all spheres of activity of the person it is necessary to involve most fully modern technologies of training, including use of visual and interactive representation of information by means of computer programs, Internet technologies.

This project constructed on generalization of theoretical knowledge and information technologies is based on technology of remote education in the virtual training moodle environment. Educational content on discipline "Economy and management of retail distribution networks" is intended for the students who are trained in the direction of preparation 38.03.02 "Management" of the "Economy and Management of the Organization" profile as a result of which use computer literacy as a factor of development of information and communication culture, information society increases.

The purpose of educational content is introduction in educational process of the innovative methods of training directed to increase of level of mastering of theoretical and practical material on discipline – "Economy and management of retail distribution networks", developments in students of skills of the analysis and effective submission of information, her storing and assimilation. For achievement of a goal it is necessary to allocate the main objectives of educational content:

Remote representation of the main educational and methodical developments on discipline "Economy and management of retail distribution networks";

Consideration of basic concepts of discipline, features of creation of a control system of retail distribution networks;

Assessment of level of training of students on discipline, possibilities of self-checking of knowledge through system of test tasks;

Development of skills of remote interaction of the teacher and students.

Scientific novelty of this project is based on fuller and complex realization of the pedagogical, methodical and didactic principles of training that provides strengthening of an innovative component in training and expansion of information educational space of higher education institution. Distance learning with use of interactive technologies, information computer technologies is aimed at formation at students of professional competences of area: developments of economic thinking, information analysis and management of professional activity.

This electronic resource is developed for discipline of an economic profile – "Economy and management of retail distribution networks". "The economy and management of retail distribution networks" is the purpose of a subject matter receiving system idea of the main economic and administrative aspects of functioning of retail distribution networks, including about economic and financial problems and the issues resolved by economists during creation and development of these economic entities.

Problems of discipline are:

To study the theoretical bases of the economy of retail distribution networks;

To create complete idea of ways of construction and formation of distribution networks, models of management of them, developments of strategy of development;

To develop skills of the analysis of business situations in the field of the theory and practice of management of retail distribution networks.

The student has to be guided in the legislative base and standard and legal documents concerning operating conditions of retail distribution networks, to be able to find optimal solutions on ensuring effective management of the enterprise, to estimate the existing risks and interrelation of business processes.

As a result of development of discipline the following competences have to be created:

PK-3 - Readiness for development of procedures and control methods.

PK-19 - Ability to plan operating (production) activities of the organizations.

As a result of studying of discipline the student has to:

*Nobility:*

- the basic economic concepts, macro - and microeconomic indicators of an assessment of a state and tendencies of development of distribution networks in retail trade;
- features of development of organizational structures of retail distribution networks and models of management;
- main business processes of retail distribution networks, features and requirements to their construction;
- theoretical and practical approaches to definition of sources and mechanisms of ensuring competitive advantages in activity of retail distribution networks;

*To be able:*

- to set the purposes and to form the tasks connected with studying and the analysis of activity of retail distribution networks;
- to analyze external and internal environment of functioning of retail distribution networks, to reveal key elements and to estimate their influence on efficiency;
- to reveal additional reserves for improvement of operating conditions of retail distribution networks;
- to develop corporate competitive and organizational and functional strategies of development of retail distribution networks.

*To own:*

- by economic methods of the analysis of behavior of consumers, producers, owners, investors and states;
- by methods of realization of the main administrative functions and development of economically reasonable decisions directed to management efficiency increase;
- economic methods of management of business processes and economic operations;
- skills of the organizational and economic forms of government retail distribution networks.

The structure of an electronic resource includes the following sections:

*parenthesis*
*working program of discipline*
*educational and methodical providing course*
*list of the main literature and useful links*
*presentations of lectures*
*questions for preparation for offset*
*list of tasks for examination performance*
*tests for control of knowledge*

The maintenance of educational content it is presented in fig. 1.

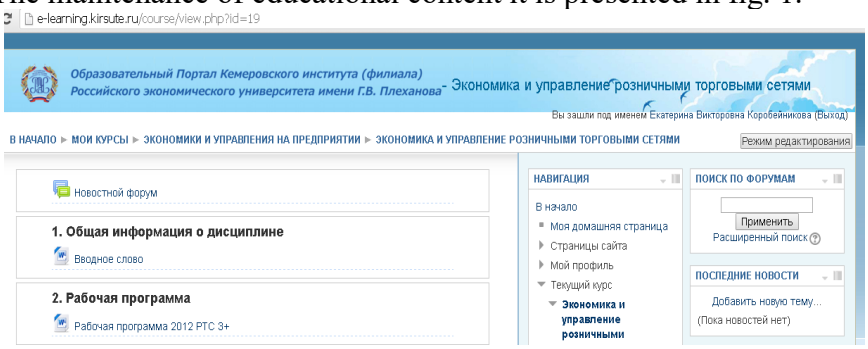



Fig. 1. Maintenance of educational content

The PARENTHESIS contains justification of relevance of an electronic resource, its purpose and tasks, a contact information about the teacher.

The section "Educational and Methodical Providing Course" contains a list of methodical developments on this discipline.

The section "LIST of the MAIN LITERATURE AND USEFUL LINKS" "The economy and management of retail distribution networks" (fig. 2) contains a list of references, references to the Internet resources including the knowledge base, information and legal portals on discipline.

**Основная литература по дисциплине**

1. Коробейникова, Е.В. Экономика и организация отрасли. Конспект лекций. – Кемерово: КемИ (филиал) РГТЭУ, 2013. (Виртуальный читальный зал: http://old.kirsute.ru/metod)
2. Чеглов, В. П. Экономика и организация управления розничными торговыми сетями : учеб.пособие для вузов / В. П. Чеглов. - М. : Вуз. учеб., ИНФРА-М, 2012. – 288 с. Режим доступа: http://znanium.com/catalog.php?bookinfo=256809
3. Чеглов, В. П. Экономика и организация управления розничными торговыми сетями : практикум [Электронный ресурс] / В. П. Чеглов. – М. : Вуз. учеб., ИНФРА-М, 2013. – 224 с. Режим доступа: http://znanium.com/catalog.php?bookinfo=364756
4. Скляренко, В.К. Экономика предприятия [Электронный ресурс]: учеб.пособие / В.К. Скляренко, В.М. Прудников. – 2-е изд. – М.: НИЦ Инфра–М, 2013. – 192 с. Электронный ресурс. Режим доступа: http://znanium.com/catalog.php?bookinfo=369920

**Перечень ресурсов информационно-телекоммуникационной сети Интернет, необходимых для освоения дисциплины**

- Федеральный образовательный портал «Экономика, социология, менеджмент» http://www.ecsocman.edu.ru/
- Федеральный портал «Российское образование» http://www.edu.ru
- Национальный Открытый Университет «ИНТУИТ» http://www.intuit.ru
- Информационно-правовая система «Гарант».
- Информационно-правовая система «Консультант-Плюс».
- Все о розничной торговле – http://retail.ru/
- Ритейлер – http://www.retailer.ru/
- Вестник McKinsey – http://www.mckinsey.com
- каталог электронных ресурсов кафедры (методические указания по выполнению лабораторных и практических работ, другие учебные материалы; и литература по дисциплине).

Fig. 2. Contents of the file with the main literature and useful links

The PRESENTATIONS of LECTURES include the following subjects:

"Subject 1. Retail distribution networks. Basic concepts, stages of development and current state"

Retail distribution network: concept, classification, competitive advantages. Features of the integrated companies. Development stages in Russia. A current state and tendencies of development in Russia. Assessment of consolidation of business and indicators of the comparative analysis of activity of retail distribution networks. Bases of state regulation of activity of distribution networks.

"Subject 2. Organization and management of retail distribution networks"

Legal forms of retail distribution networks. Associations and unions of retail distribution networks. Models of management of retail distribution networks: lotochny, hybrid, holding, investment, centralized. Informatization of administrative functions. Management of business processes in retail distribution networks. Management of objects of a retail distribution network: choice of a format and location. Assessment of appeal of the territory.

"Subject 3. Management of sales and purchasing activity in retail distribution networks"

Organization by purchasing activity, selection criteria of suppliers. Stockpile management in retail distribution networks. Assortment policy. Category management. Features of pricing in retail distribution networks. Differentiation of sales channels retail distribution networks. The analysis and planning of sales in retail distribution networks. Sales promotion and technologies of sales in retail distribution networks.

"Subject 4. Resource management in retail distribution networks"

Material support of activity of a retail distribution network. Features of management of the fixed and current assets in retail distribution networks. Features of human resource management in retail distribution networks. Methods of motivation and stimulation of personnel in retail distribution networks.

"Subject 5. Cost management, income and profit in retail distribution networks"

The analysis and planning of expenses in retail distribution networks, ways of their optimization. Management of the income and profit in retail distribution networks. Budgeting. Methods of an assessment of efficiency of retail distribution networks. Estimation of cost of a distribution network.

"Subject 6. Bases of strategic management of a retail distribution network"

Bases of strategic management. Mission, purposes and strategy of retail distribution networks. Management on the purposes. SMART system. Investment and innovative policy of retail distribution networks.

The presentations of lectures are executed in the Microsoft PowerPoint format. The presentations are downloaded from the website and open in the special program (fig. 3-4).

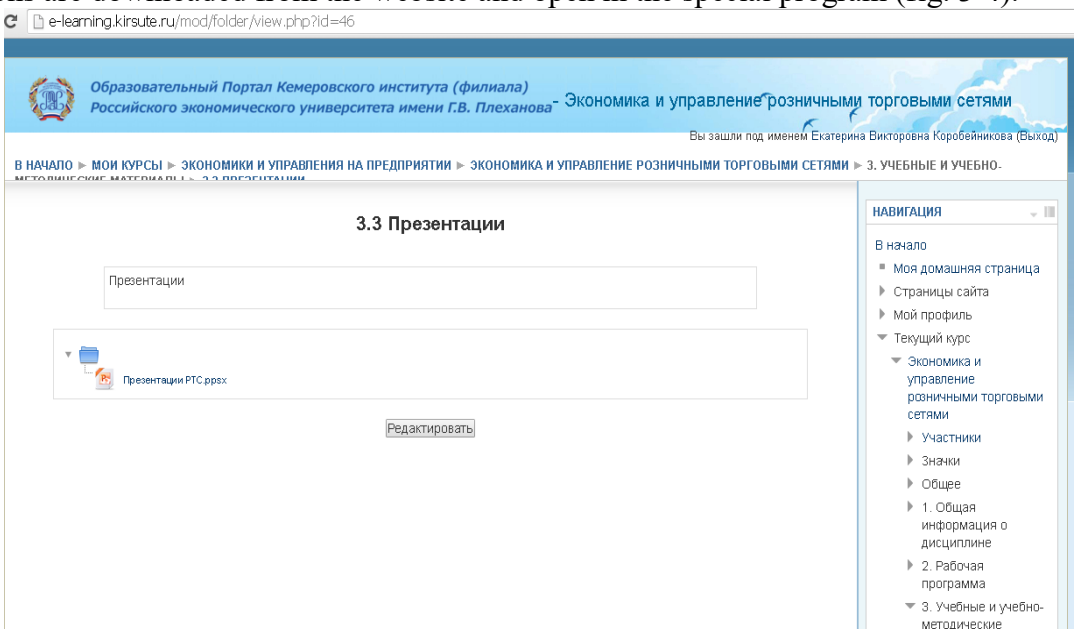



Fig. 3. Sample of the page of the section of the presentation

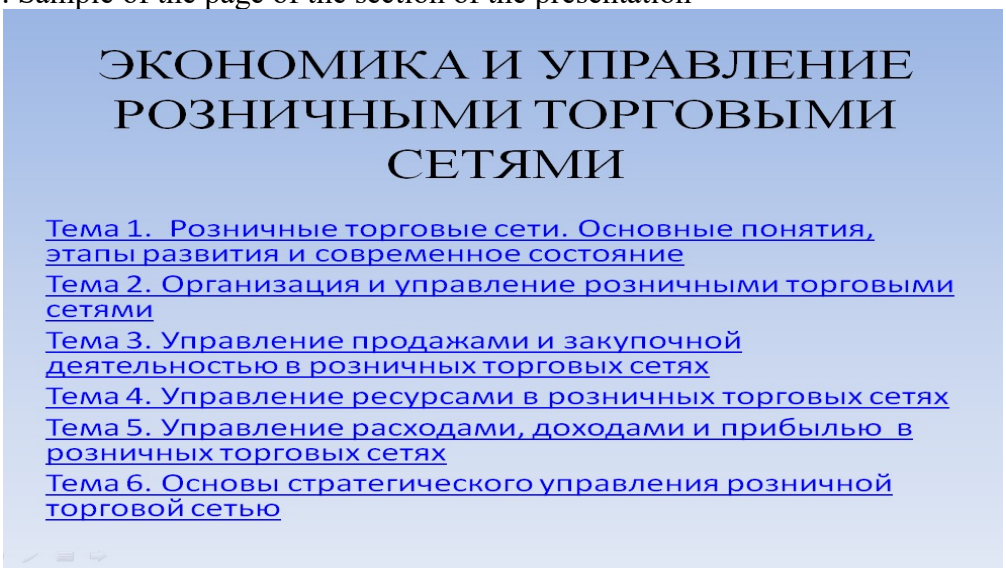



Fig. 4 Title page of the presentations of lectures

The section "LIST of TASKS FOR EXAMINATION PERFORMANCE" contains methodical instructions on performance of examination on discipline.

The purpose of performance of examination is fixing and check of the theoretical knowledge of students gained in the course of studying of a training material, development of skills and abilities of the solution of practical problems of management of retail distribution networks. According to a goal in examination abilities of the student in selection of special literature and normative documents for the chosen subject, findings of the most significant

aspects of development of retail distribution networks and an assessment of efficiency of their activity, extent of their impact on the sphere of the address and economy in general have to be shown.

The section "TESTS FOR CONTROL of KNOWLEDGE" includes test tasks on the studied subjects of discipline and assumes an assessment of level of development of discipline. A page sample with the test it is presented in fig. 3.

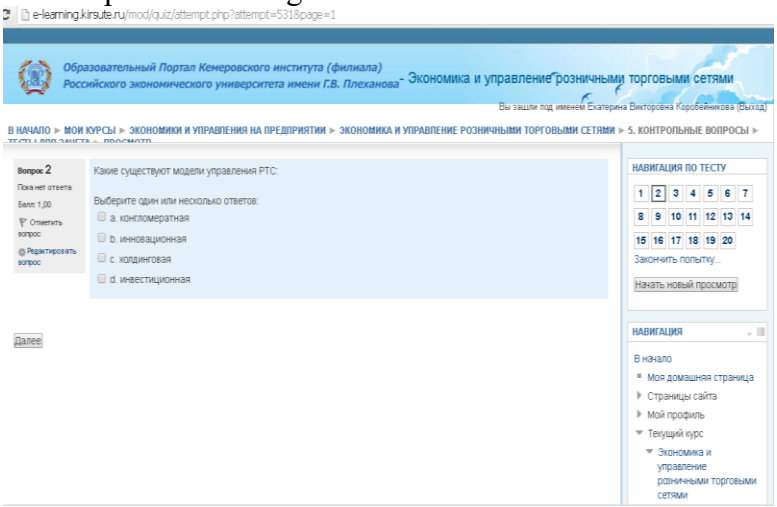



Fig. A page sample with the test

Examples of tests for control of knowledge

State regulation of activity of retail distribution networks is necessary for:

prevention of monopolization of the market;

strengthenings of a role of the state;

increases of the income of the population;

control over activity of large financial structures.

The discounter is....

the enterprise of wholesale trade realizing consumer goods at reduced prices;

the enterprise of retail trade realizing essentials;

the trade enterprise realizing goods at reduced prices with an immediate reimbursement;

the enterprise of retail trade realizing convenience goods at reduced prices.

Expenses on a way of reference are subdivided into commodity groups on:

production and non-productive;

direct and indirect;

variables and constants;

pure and additional.

Costs of information search, decision-making, negotiating are... costs

imputed;

discounted;

constants;

transaction.

What models of management of retail distribution networks exist:

innovative;

holding;

investment;

conglomerate.

In general use of the educational content given in this electronic resource will allow to reach development by students of intellectual and practical activities, mastering the knowledge and abilities demanded in everyday life, and exerting considerable impact on the professional formation of their personality meaning not only formation of labor skills but also their legal literacy.

Realization of the innovative technologies in training presented in an electronic resource "Educational content on discipline "Economy and management of retail distribution networks" will provide increase of efficiency of educational process, on the one hand, and growth of professionalism and computer literacy of students – with another.

**2. The used technical means**

Operating system – Windows XPProfessional, 2000, 7,8, the processor – Celeron 2, 67 GHz, the RAM – 496 Mb, video the adapter – 16 Mb, an empty seat on the hard drive – 360 Mb.

Work with information resource requires existence of the Microsoft PowerPoint program.

**3. Special conditions and requirements of organizational, technical and technological character**

Internet access and registration in a program cover OF MOODLE (http://e-learning.kirsute.ru/) is necessary.

**4. Conditions of transfer of documentation or its sale**

Transfer of documentation is carried out with the consent of authors of development. Concerning acquisition of an electronic information and education resource to address developers by e-mail rencem@kirsute.ru

## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic Educational and Methodical Grant for Bachelors " Legal Regulation of the Tax Relations " (the Direction 080100.62 — " Taxes and the Taxation ", a Profile — the Bachelor)"

*Sterlitamak branch of Federal public budgetary educational institution of the higher education "Bashkir state university"*

*Bojko N.N.*

***UDC** 378*

***GRNTI** 14.35.07, 10.21.63*

**1. Functional purpose of a product, scope, its appointment**

The electronic educational and methodical grant for bachelors "Legal regulation of the tax relations" is intended for students of the higher education institutions which are trained in the direction of preparation: 080100.62 Economy, to a preparation profile: "Taxes and the taxation" for preparation for seminar (practical) occupations of discipline.

For this purpose in a grant methodical recommendations for the teacher are submitted, to students by preparation for seminar occupations, the recommendation about performance of test tasks, the recommendation to students on the organization of independent work. Besides, each subject contains study questions, methodical recommendations to a subject, the questions discussed at practical occupation, tasks for independent work, the recommended literature.

The electronic educational and methodical grant has great practical value. With its help it is possible to represent visually on the screen in various form of educational and methodical information that allows: to initiate processes of assimilation of knowledge, acquisitions of skills of educational, practical activities; it is effective to exercise control of results of training, repetition; to stir up cognitive activity of trainees; to form and develop certain types of thinking.

The software product contains all subject, necessary on this discipline, and is convenient in use. Thanks to ergonomic design pleasantly and comfortably to work with a grant.

Development stages of an electronic educational and methodical grant:

1) inspection of object and justification of need of creation of an educational and methodical grant for bachelors "Legal regulation of the tax relations";

2) systematization of a training material according to sections of the course "Legal Regulation of the Tax Relations";

3) creation of the hypertext version of an educational and methodical grant on the basis of the HTML language;

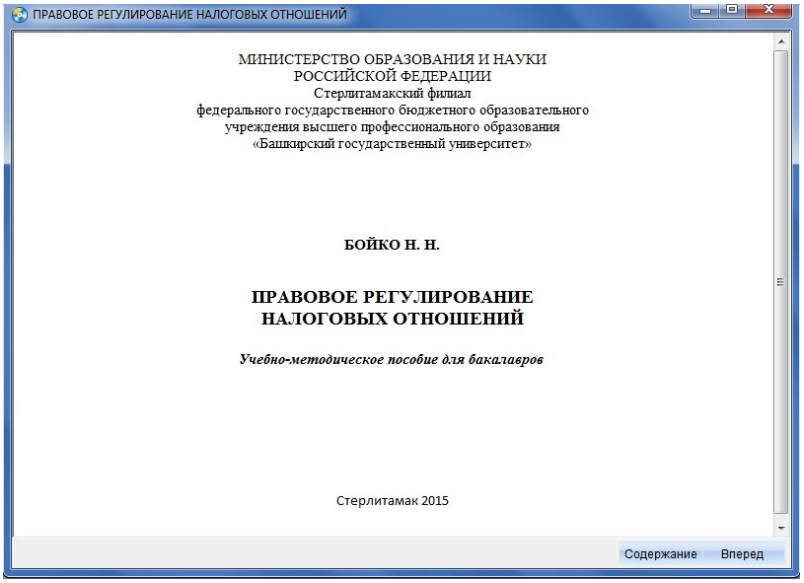
4) studying of the existing analogs of an educational and methodical grant "Legal regulation of the tax relations";

5) creation of objects of interactive virtual demonstration installations, development of design means of computer graphics;

6) development of the ergonomic, comfortable interface of the user, by means of the software of AutoPlay Media Studio 8.0.7.0.

The user interface provides comfortable interaction of the user with the software product. The interface of system is clear and convenient in use, conforms to modern ergonomic requirements. Screenshots of an electronic educational and methodical grant are given below

1

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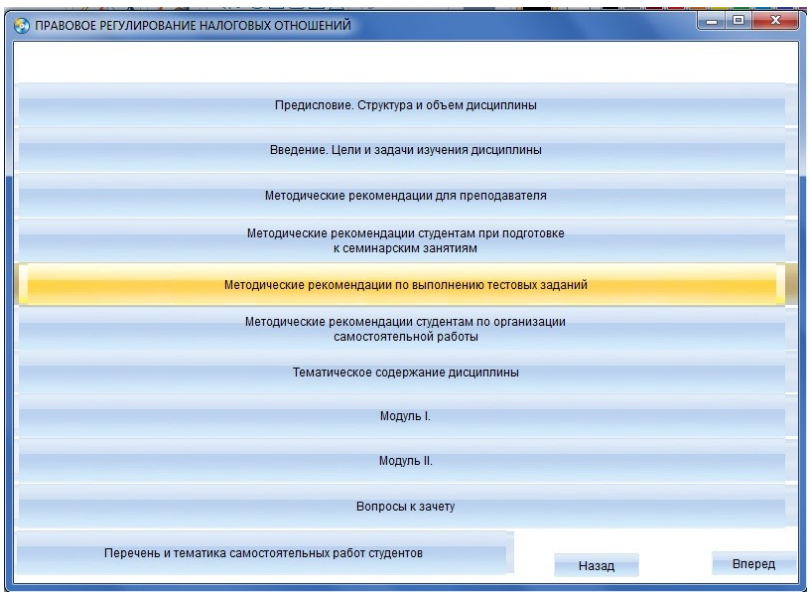


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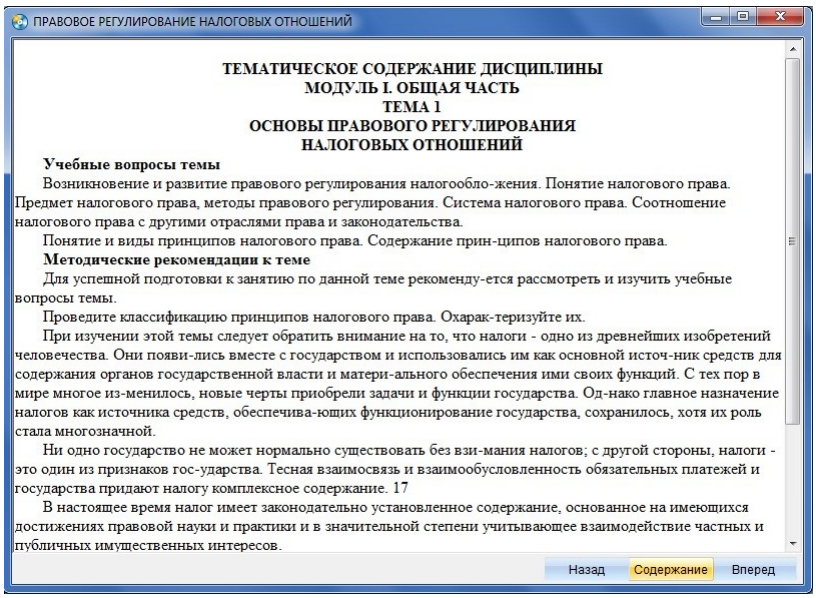



**2. The used technical means**

The interactive Electronic educational and methodical grant for bachelors "Legal regulation of the tax relations" is created with use of the software of AutoPlay Media Studio of version 8.0.7.0.

Text information is created when using the Microsoft Office package 2007.

**3. Special conditions and requirements of organizational, technical and technological character**

Treats necessary conditions of application of an electronic educational and methodical grant: existence of the Intel Pentium computer above; 20 Mb of free disk space; Windows XP OS above; software of Flash Player of version 8.0 above.

**4. Conditions of transfer of documentation or its sale**

Condition of transfer of this software product is the contract of purchase and sale signed between the Sterlitamak branch of the Bashkir state university and interested party.

## ADVERTISING AND TECHNICAL DESCRIPTION "Manual "Foreign (English) Language of Professional Communication"

*Kemerovo institute (branch) of federal public educational institution of the higher education "Plekhanov Russian Academy of Economics"*

*ZHironkina O.V.*

***UDC** 378*

***GRNTI** 14.35.07, 16.41.21*

**1. Functional purpose of DEVELOPMENT, area of its application, its restriction**

In the modern economic conditions which are characterized by globalization and high level of the competition both on internal, and in the international labor market foreign language skills have special value. The linguistic capital which is saved up in higher education institution in many respects promotes increase of level of competitiveness of the graduate and his successful adaptation to professional activity.

The social and economic changes happening in society set new tasks when training bachelors and masters with knowledge of English in various professional areas. Full formation of common cultural and professional competences of bachelors takes place in process of studying

of professional English which knowledge is not only means of personal growth and professional competence of students of higher education institution, but also an indispensable condition of successful professional activity.

IN THIS REGARD studying of disciplines "foreign (English) language" and "foreign (English) language of professional communication" gains the special importance when training bachelors and masters of the economic directions and specialties.

The manual "Foreign (English) Language of Professional Communication" is intended for students of the direction of preparation 38.03.01 "economy" (level of the higher education a bachelor degree), 38.04.01 "economy" (level of the higher education a magistracy), 38.04.08 "finance and the credit" (level of the higher education a magistracy), and the specialties 38.05.01 "economic security" and can be used when studying disciplines "foreign (English) language" and "foreign (English) language of professional communication".

The purpose of the manual is training in practical knowledge of English within direction/specialty. Achievement of this purpose is carried out through improvement of skill of reading economic texts and expansion of a stock of professional lexicon. The communicative skills necessary for professional communication with foreign partners are put during the work with the special interactive tasks presented in each section.

Modern fgos demand from the teacher of active use of integrative technologies in educational process. In this regard each section of the manual contains the tasks directed to activization of interactive skills, and also independent information search.

The manual consists of 8 thematic sections. Each section includes a number of the blocks (reading practice, language practice, speech practice) directed to formation of language skills in a certain sphere of speech activity.

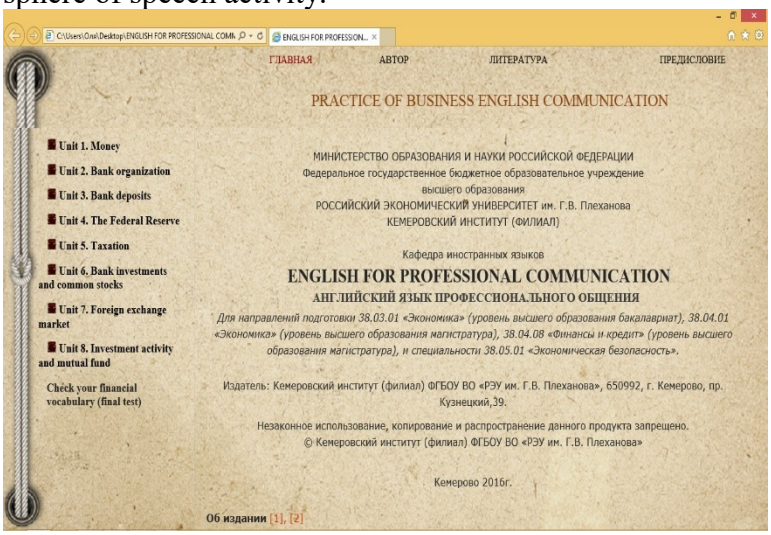



Fig. 1. Structure of the manual

The speech practice block contains not only interactive tasks (role play, brainstorming, final discussion), but also the Russian-language text that promotes improvement of skill of summarizing and activization of professional lexicon in the direction.

The video records and tasks presented in sections to them give to students the chance of formation of skill of audition of the English-language speech within professional subject.

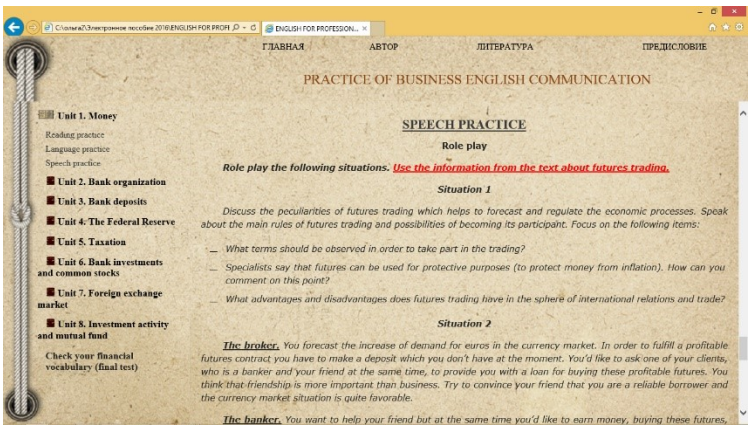



Fig. 2. The section "speech practice" aimed at formation of skills of professional communication.

In final part of a grant the test test which will help to establish the level of assimilation of a training material is offered, to reveal gaps and shortcomings of knowledge of students for the purpose of their further adjustment by the teacher.

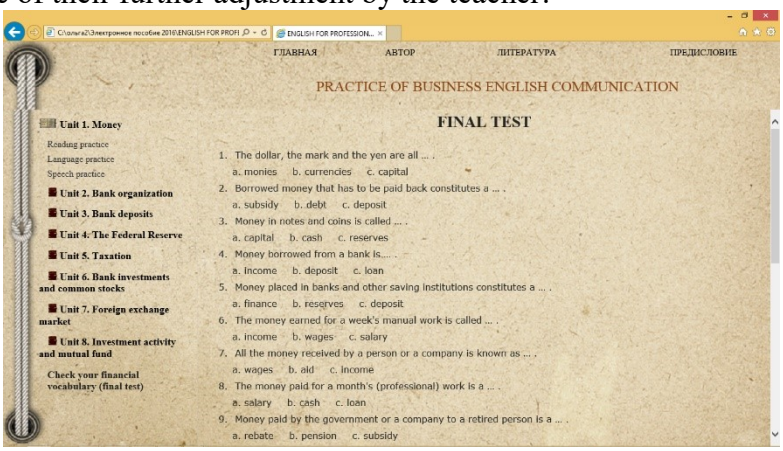



Fig. 3. Final test "check your financial vocabulary".

The grant can be used by the teacher, both for classroom occupations, and for independent studying of material by students. For the purpose of involvement of students to independent work in each section a row is offered those for preparation of papers and reports with their further presentation on occupation.

The manual is developed by CoffeeCup Free HTML Editor v 9.5 and posted on the website of the Kemerovo institute (branch) of REU of G.V. Plekhanov in the Virtual Reading Room.

**2. The used technical means**

The personal computer with the Windows 98/Me/2000/XP/VISTA/7/8/8.1 operating system, Columns (earphones), Flash player, the Browser with support of HTML 5 is necessary for work with materials.

3. **Special conditions of application and requirement of organizational, technical and technological character**

Special conditions are not required.

**4. Conditions of transfer of program documentation or its sale**

Transfer of materials for their use in any purposes happens from the written consent of the author.

# ADVERTISING AND TECHNICAL DESCRIPTION "The Training Program " Operation of Armoured Equipment " (the Direction 23.05.02 — Vehicles of a Special Purpose, a Profile — a Specialist Programme)"

*Federal public budgetary educational institution of the higher education "Omsk state technical university"*

*Pepelyaev A.V., Gerasimov S.D., Bakunov O.S. . Vorob'ev A.N., Lesnoj V.V., Pahomov I.A., SHtyrc E.V.*

***UDC** 378*
***GRNTI** 14.35.07, 78.25.11, 78.27.49*

## 1. Functional purpose of the program, scope, its restrictions

This work represents the training program "Operation of armored equipment".

It allows:

1. To acquaint students with types, contents and mission of technical and operational documentation of armored equipment.
2. To train students in drawing up and the correct filling of documentation during a cycle of operation of armored equipment.
3. The program is developed by means of the C# programming language in the Microsoft Visual Studio 2010 Express development environment.
4. The training program consists of the following sections:
5. Section of theoretical information on operational documentation of armored equipment.
6. Section of practical training in filling of documentation
7. Instruction for use of the program
8. Information on authors

The description of process of work in the main sections of the program is given below.

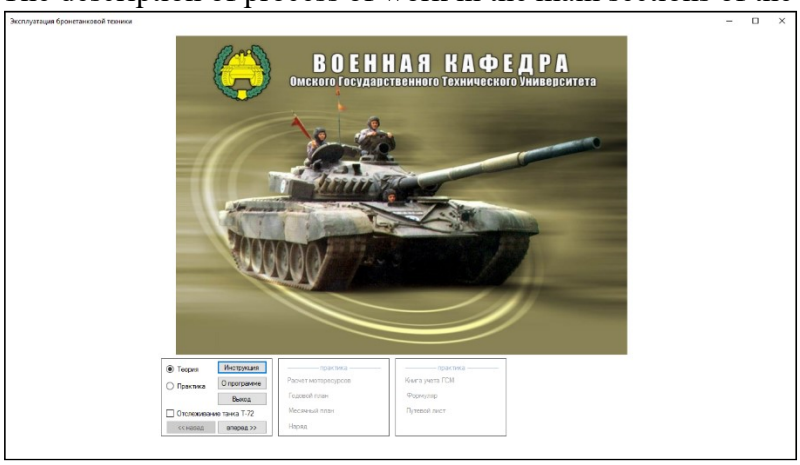



Figure 1 – Main window of the program

In figure 1 the main window of the program is presented. The program has two sections: The theory and Practice which examples are displayed in figures 2 and 3 respectively.

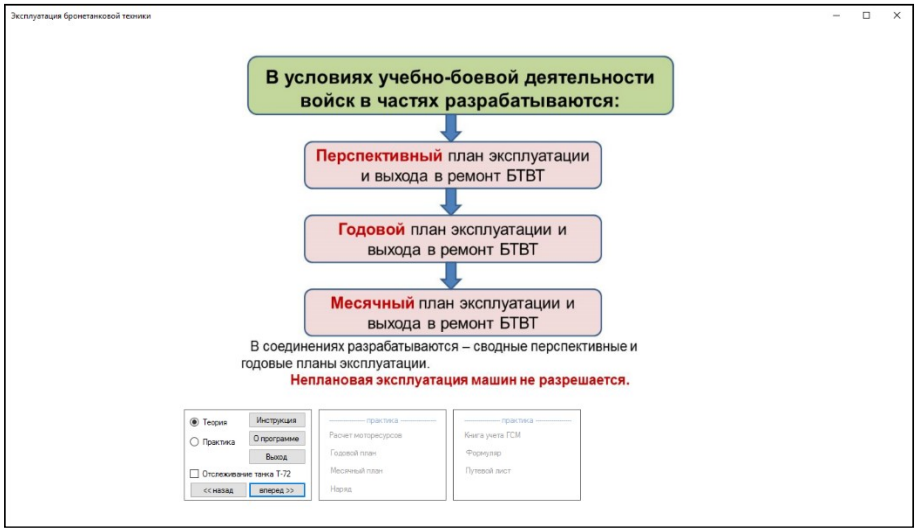



Figure 2 – Theoretical section of the program

Information on types, mission and rules of filling of operational documentation of armored equipment is provided in the theoretical section of the program.

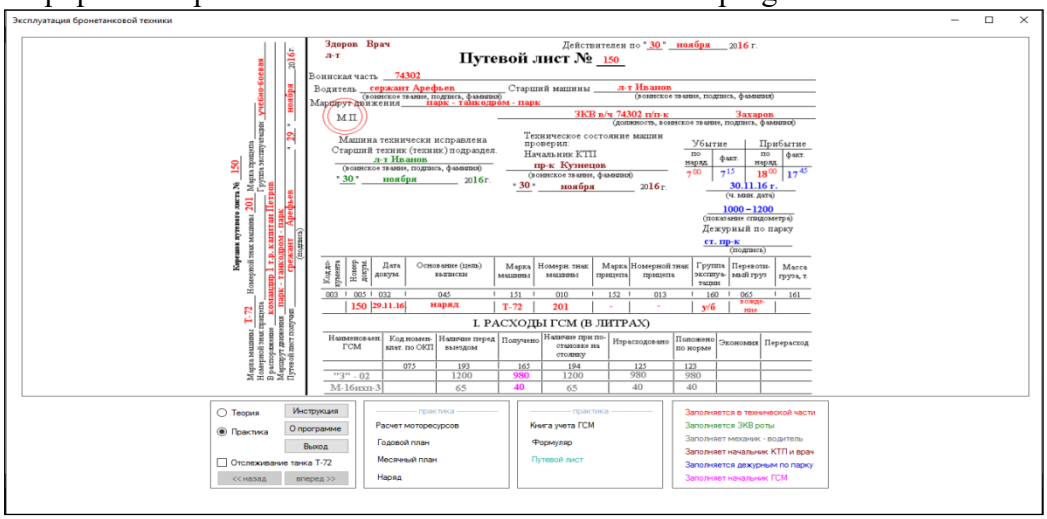



Figure 3 – Practical section of the program

In the mode of practical training examples of step-by-step filling of documentation with use of color indication and hints on filling of fields of documents are given.

This training program can be used by the cadets of military educational institutions, students who are trained according to the program in training of reserve officers at military departments of higher educational institutions.

Restrictions of application of the program:

– start of the training program requires existence established in the Net Framework system it is not lower than 3 versions.

**2. The used technical means**

C# (the SI Sharp" is said ") – an object-oriented programming language. It is developed in 1998 - 2001 by group of engineers under the leadership of A. Heylsberg in the Microsoft company as applications programming language for the Microsoft .NET Framework platform.

Microsoft Visual Studio — a line of the products of the Microsoft company including an integrated environment of development of the software and some other tools. These products allow to develop both console appendices, and appendices with the graphic interface, including with support of the Windows Forms technology, and also websites, web applications and web services. Visual Studio is included by the editor of a source code and the built-in debugger of a code. Other built-in tools include the editor of forms for simplification of creation of a graphic application interface, the web editor, the designer of classes and the designer of the scheme of the database.

**3. Special conditions of application and requirement of organizational, technical and technological character**

Use of this training program requires existence of the personal computer equipped with the processor not below Intel Pentium, the RAM not less than 512 MB, the Windows 2000 operating system or later versions with the installed Net Framework 3 package and later.

**4. Conditions of transfer and sale of program documentation**

The training program can be transferred to the interested person or the organization on the basis of the contract with OMGTU and authors according to the current legislation.

**5. List of references:**

1. T-72 A tank. Technical specification and maintenance instruction /
M-in defenses of the USSR. – M.: Voyenizdat, 1986. – Book 1. – 112 with
2. Lepeshinsky, I. Yu. Ustroystvo of armored equipment: studies. a grant in 2 h / I. Yu. Lepeshinsky [etc.]. – Omsk: Publishing house of OMGTU, 2011. – P.1. – 156 pages.

## ADVERTISING AND TECHNICAL DESCRIPTION "The E5 Exercise Machine for the Analysis of Digital Schemes"

*Marchenko A.L., Opadchij YU.F., SHul'gin D.A.*

***UDC*** *378*
***GRNTI*** *14.35.07*

**1. Functional purpose of a product, scope, its restrictions**

Creation of the innovative educational environment necessary for training of highly qualified competent specialists (in the conditions of sharp reduction of time of occupations of students with the teacher, with the emphasis on independent work) assumes improvement of educational programs, and also use in educational process of modern technologies of training, including educational exercise machines –computer programs by means of which on monitors of electronic devices processes, electronic schemes of devices, and also real laboratory stands are modelled.

Are the basis for program exercise machines: purposeful training of students in the course of the repeated repeated solution of tasks (during the work in the training mode) and a technique of an assessment of their knowledge, abilities, skills [1, 2].

The virtual E5 exercise machine developed in the cross-platform Qt Creator [3] environment with use of a programming language C ++ for the analysis of the digital schemes studied in the Electronics [4] module of the basic discipline for higher education institutions of "The electrician and the electronic engineer" including in curricula of many natural-science directions of training of specialists is provided by two operating modes of the student: training and control.

In the E5 exercise machine the student "collects" the scheme of the digital TsU1 device from the images of logical elements submitted on the screen of the display (And, OR, NOT) and functional knots (the decoder DC, the MS multiplexer, CT1 and CT2 counters, the SM adder) and fills in the table of conditions of the SM adder according to the set sequence of the entrance cba codes.

The block diagram of the program E5 exercise machine developed by us for the analysis of conditions of IMS of the scheme of the digital device (DD) is submitted in fig. 1.

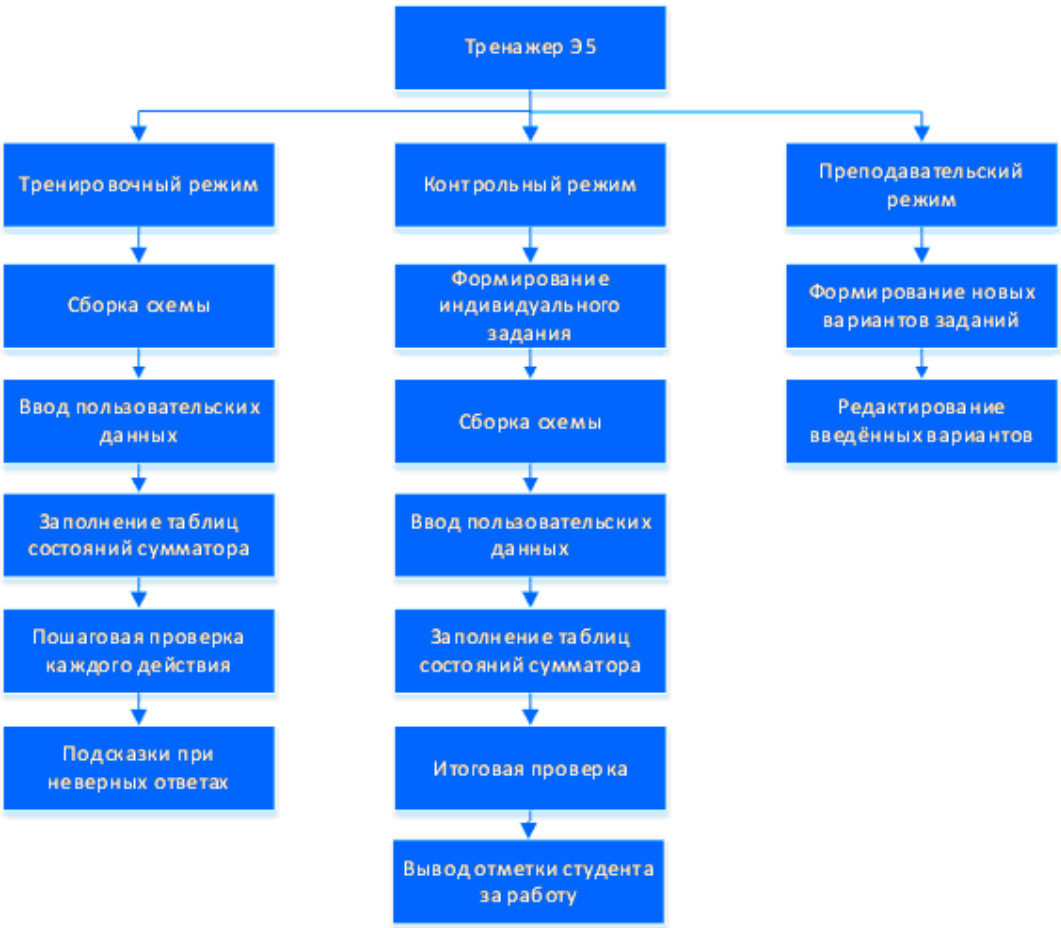



Fig. 1. Block diagram of the E5 exercise machine

The exercise machine functions in two modes: in training and in control. In *the training* mode the student can repeatedly carry out the same operation of a task before receiving positive result without restriction of time, and also step by step execute and check operations of a task. At the same time the student has to: to collect the scheme, to enter scheme parameters, to fill in the table of conditions of the SM adder, to cause passport data of IMS, having clicked a mouse on their images on the scheme TsU1.

Distinctive feature of operation of the exercise machine in the training mode is the provided possibility of an assessment of each action of the student. At the correct performance of the next operation the student is allowed to performance of the following operation of a task, about the made mistake the message is displayed and the cell of the table or a wire of connection of elements of the scheme is automatically allocated in the red color. The student is forced to study the corresponding information material and to correct an error, eventually – to receive skills of practical actions.

In *the control* mode of the exercise machine the condition of a task gets out of the options which are written down in the database and is displayed the display in a random way. The student has to perform a task during the time determined by the teacher. The assessment of its actions in this mode is carried out on completion of all stages of a task with delivery of an integrated assessment for everything correctly or with mistakes the executed operations of a task. The result is presented in points. The assessment is made as follows: for correctly collected scheme five points are charged (assembly of the scheme requires 24 conductors). Knowing weight (in points) the correct connection by the conductor of conclusions of two chips (IMS), it is easy to calculate the general point for the collected scheme with mistakes. For correctly completed table of conditions of the SM adder fifteen points at the rate of 3 points for each of five states caused by five various entrance codes are charged.

The database (standards of variants of tasks) is created during the operation of the exercise machine in regime of the administrator in which the teacher, after the correct input of

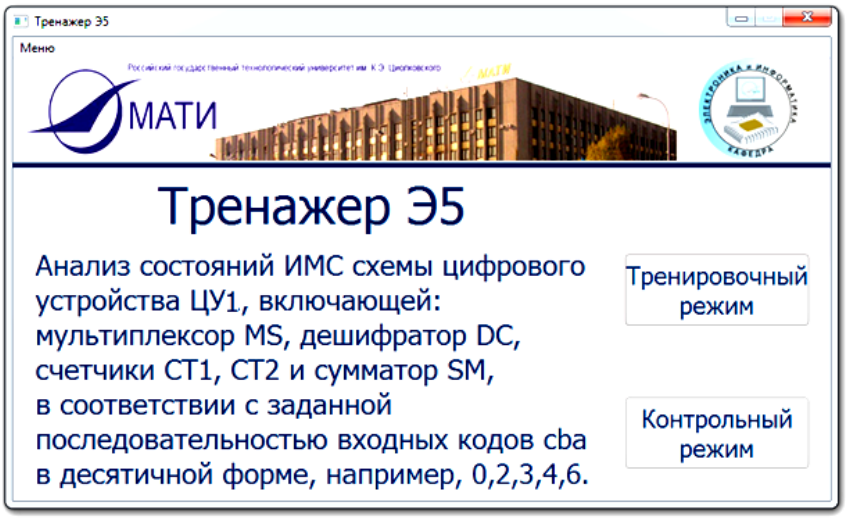
login and the password, collects the scheme according to variant of the task, fills in tables with the data which are standards for this variant of the task and writes down them in the database. The database can at any time is added by the teacher new options.

After studying of structure of the exercise machine (see rice 1) and instructions for work on it (having caused the Reference), the student chooses the mode of its work (if the exercise machine for the first time, naturally, is started the Training mode (fig. 2) is chosen), and upon termination of training the student shows the educational achievements in the Control mode (in the presence of the teacher during testing session).

Fig. 2. Exercise machine homepage

Let's consider the exercise machine interface during its work in the training mode (fig. 3). The working window can be divided into three functional areas: area of a task and input of initial data (occupies all right half of a window), the working field for assembly of the scheme of the digital device (the left half of a window), the table with initial parameters (below).

Having studied a task and contents of table 1, the student has to enter basic data of IMS




TsU1 into table 2, then carry out check, having clicked a mouse on the Check of Start of the Program of Check of Just Executed Operation of a Task button–. If operation is executed without mistakes, is activated

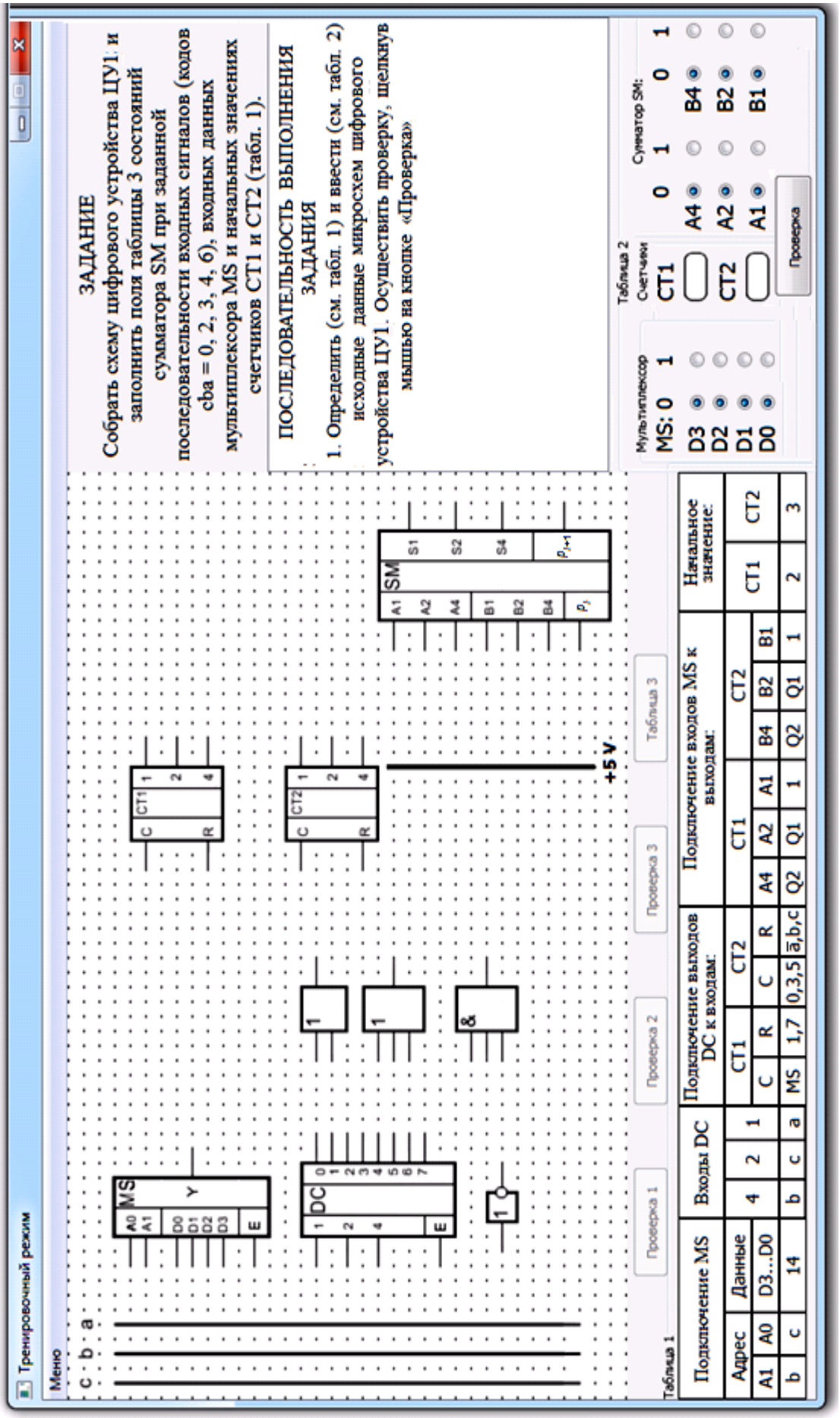



Рис. 3. Интерфейс тренажера Э5 в тренировочном режиме

Check of 1 Permission to Performance of the Following Step of a Task button–. The

working field of assembly of the scheme TsU1 is at the same time activated, and the instruction of performance of the following (second) operation will be added to a widget of a task.

The main part of the interface of the exercise machine functioning in the training mode is occupied placed in the IMS left window of future scheme TsU1: And - NOT, 3I, 2ILI and 3ILI, MS, DC, CT1 and CT2, SM, detailed information on which is displayed the display after click by right mouse button on their images (fig. 4). For closing of an insert with information on IMS it is necessary to click on it the left key of a mouse.

In the left working field the user step by step has to collect the scheme TsU1 according to

**СУММАТОР**

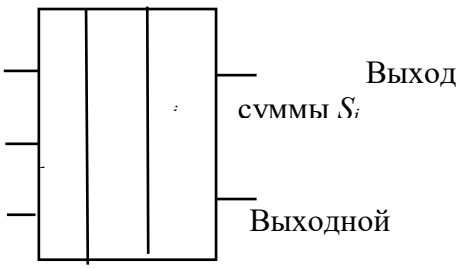
Сумматор SM – это функциональный узел, выполняющий бинарное сложение одно- или многоразрядных двоичных чисел в соответствии с правилами одноразрядного сложения (см. рисунок слева, внизу).

Для текущего разряда суммы $S_i$ логическое выражение имеет вид

$$S_i = \bar{a}_i b_i \bar{p}_i + a_i \bar{b}_i \bar{p}_i + \bar{a}_i \bar{b}_i \bar{p}_i + a_i b_i p_i, \quad p_{i+1} = a_i b_i \bar{p}_i + a_i \bar{b}_i p_i + \bar{a}_i b_i p_i + a_i b_i p_i,$$

где $p_i$ – перенос из младшего разряда; $p_{i+1}$ – выходной перенос.

Известно, что числа в любой позиционной системе счисления складываются поразрядно с учётом возможного переноса единицы из соседнего младшего разряда. Так, при суммировании 4-разрядных бинарных чисел $a_i = a_4a_3a_2a_1 = 0101_2$ и $b_i = b_4b_3b_2b_1 = 1001_2$ с учетом $p_i = 1$ получим на выходе сумматора SM сумму $S_i$ и перенос $p_{i+1}$, равные




$$\begin{array}{r} a_4a_3a_2a_1 = 0101 \\ b_4b_3b_2b_1 = 1001 \\ 1 \leftarrow p_i \\ \hline S_i = S_4S_3S_2S_1 = 1111 \\ p_{i+1} = 0, \end{array}$$

а при $a_i = 1101_2$, $b_i = 1001_2$ и при $p_i = 0$ получим

$$\begin{array}{r} a_4a_3a_2a_1 = 1101 \\ b_4b_3b_2b_1 = 1001 \\ 0 \leftarrow p_i \\ \hline S_i = S_4S_3S_2S_1 = 0110 \\ p_{i+1} = 1 \end{array}$$

a task. At the end of the correct performance (or after correction of mistakes) each stage of a task and clicks the mouse on the corresponding Check buttons (1, 2, 3) in a widget of a task outputs instructions for performance of the following stage.

The operations and actions which are carried out by the user and by means of subprogrammes of the exercise machine:

– at input of initial parameters. Installation (click of a mouse) in radio receiving stations of the table of 2 values the ravine. 1 or ravine. 0 on D3 entrances … D0 of the MS multiplexer is conducted on the set information decimal code (14, see tab. 1), initial values of CT1 and CT2 counters are entered (in a decimal code) into fields of rectangles with the rounded corners. To enter the ravine into value radio receiving stations. 1 or ravine. 0 categories A3, A2 and B3, B2 of binary numbers A (A3A2A1) and B (B3B2B1) of the SM adder are possible randomly. It is necessary to click a mouse on the Check button on completion of input of basic data. At the same time ravine. 1, highlighted in the red color, it is necessary to replace with the ravine. 0, and highlighted in the red color the ravine. 0 – on the ravine. 1 and to repeat check. The basic data entered without mistakes highlighted in the green color register in a working matrix of the program and will be used in the analysis of parameters of conditions of IMS;

– at assembly of the scheme. According to a task the user has to collect correctly the scheme TsU1, i.e. using a mouse connect "conductors" among themselves the multi-polar IMS

located in a working window and to connect them to entrance tires or to binary power supplies. For this purpose at first it is necessary to click the left key of a mouse on the corresponding conclusion of the first IMS (for convenience of work active conclusions at guidance of the mouse cursor on them are highlighted in the yellow color), then to repeat this operation with a conclusion of the second IMS, at the same time between two IMS conclusions marked thus "conductor" automatically is inserted. To move away the "conductor" connecting two points of the scheme it is necessary to click on it a mouse and after emergence around the conductor of a continuous black frame (fig. 5) in the beginning, to click on the keyboard Delete key. For removal of allocation it is necessary to press the ESC key.

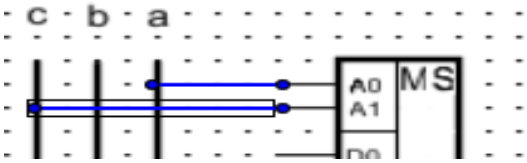



Рис. 5. Удаление "проводника"

In the left top corner of a window of the exercise machine the Menu containing the list from three points is placed: Exit, Help and entrance to Regime of the administrator. At click by a mouse on on the Help point the window with the instruction for assembly of the scheme and use of the exercise machine (fig. 6) opens.

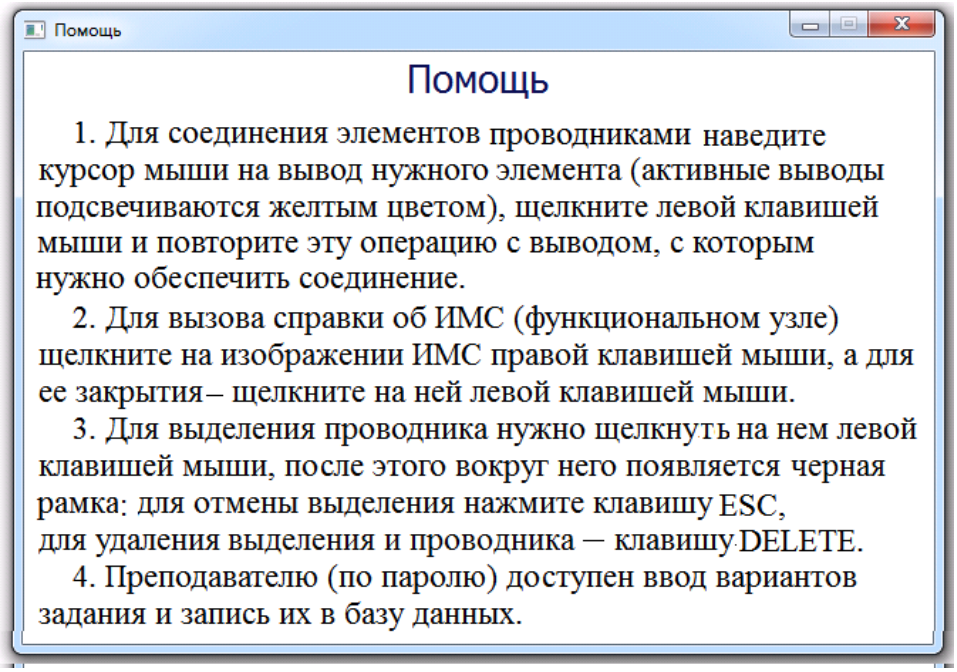



Рис. 6. Окно "Помощь"

Results of the analysis of conditions of IMS of the digital TsU1 device at various entrance cba codes, are estimated in the simulator for output codes of final IMS of the SM adder, the sum of Si and output transfers *of pi+1* in which senior category are entered in the table (tab. 3) with check of correctness after filling of every line. If in line there are no mistakes, then the filled cells of a line are highlighted in the green color, otherwise cells are highlighted in the red color, and the error message is displayed.

Table 3. Entrance and output codes of the digital TsU1 device

| Code on *cba* entrances | | | | Output codes of the SM adder | | | | | Check |
|---|---|---|---|---|---|---|---|---|---|
| to ten-tichny. | binary | | | at *pi* | S4 | S2 | S1 | $pi_{+1}$ | |
| | *with* | *b* | *a* | | | | | | |
| 0 | | | | 1 | | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 2 | | | | | | | | | |
| 3 | | | | | | | | | |
| 4 | | | | | | | | | |
| 6 | | | | | | | | | |

During the operation of the exercise machine in the control mode (for lack of check of each stage of a task) the possibility of operation of the exercise machine is provided in emergency operation. In this case at completion of testing the integrated assessment and an error message is displayed:

– Mistakes at input of basic data,

– The scheme of the device is incorrectly collected,

– Mistakes in codes of conditions of the SM adder.

In this version of the exercise machine the possibility of addition by the administrator or teacher in the database of unlimited number of variants of the task is realized. For this purpose, after start of the exercise machine in the mode of training and click by a mouse on the Menu inscription (in the left top corner), it is necessary to select the Administration item in the revealed list, and in the opened window to enter to active fields known to the teacher login and the password. On the main page of the E5 exercise machine (see fig. 3) it is necessary to fill in tab. 1 and tab. 2 with basic data of new variant of the task, to collect the scheme (about possible mistakes the message when checking will be displayed), to cause table 3 on the monitor screen and to fill it with entrance and output codes.

The developed virtual E5 simulator for discipline of "The electrician and the electronic engineer" allows users to receive quickly necessary theoretical data on IMS of the digital device, to estimate correctness of performance of each stage of a task in the course of work with the exercise machine, to eliminate gaps when studying the module of discipline, and to teachers to estimate the level of their educational achievements in the course of rubezhny control and to effectively use the exercise machine by preparation for Internet examination.

**2. The used technical means**

For applications programming use the following program environments and tools now: P-Spice, Matlab, LabVIEW, NI Multisim, etc., each of which has the merits and demerits and demands costs of acquisition. We chose the conditional and free cross-platform Qt Creator [3] environment.

Qt Creator is the cross-platform integrated environment of development of Qt-applications supporting illumination and check of syntax, autoaddition of a code, management of projects, automatic assembly of projects, start, debugging and profiling, monitoring systems of versions, etc. The visual editor of the user graphic Qt Designer interfaces (available also in the form of the stand-alone program) and the instrument of viewing of online documentation Qt Assistant enters Qt Creator. Also Qt Creator supports interaction with Qt Linguist — the instrument of localization of Qt-applications.

Qt Designer is intended for simplification of process of creation of graphic user interfaces, allowing to conduct work in WYSIWYG style ("that you see, you will receive"). By means of Qt Designer "assembly" of the interface from ready components of widgets and managers of placement, control of their properties, editing the application menu, toolbars available to the user of actions, communications between certain signals and slots is possible. The description of own widgets for their further use is possible. Usually designed interface of the project represents static treelike structure which can be written down by means of XML in so-called ui-files. If WYSIWYG-возможностей Qt Designer appears insufficiently, it is always possible to edit manually ui-files for receiving necessary result.

For development of model of this device the NI Multisim environment was used. MultiSim - a development tool and modeling of electronic schemes. NI Multisim allows to create the scheme, using extensive library of components and to emulate behavior of the integrated

circuit by means of the standard industrial SPICE simulator. Starting with version 10.1 MCU Module allowing to add to SPICE - the emulated integrated circuit the microcontroller and to program it on With or the Assembler is integrated into Multisim.

**3. Special conditions and requirements of organizational, technical and technological character**

Requirements to software and hardware: Windows XP OS is also newer, IBM PC Pentium IV above, 512 MB of random access memory, 100 MB of disk space, the monitor size not less than 17″ with the resolution not below 1024x768, the keyboard and a mouse.

Start is not required to install programs of the exercise machine the additional software: it can be started directly from a compact disk or the USB stick.

**4. Conditions of transfer of documentation or its sale**

Subprogrammes and documentation to them are united in uniform library digel.rar and are posted on the website www.maimal.ru for free downloading by the interested teachers and students of Russia and beyond its limits.

**List of references**

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4. Marchenko A.L. Electronics bases. Manual. – M.: DMK Press. 2009, 2012, 2013, 2016. Page 288.

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## ADVERTISING AND TECHNICAL DESCRIPTION "Videocourse" development of multimedia electronic courses in iSpring Suite 8"

*Federal public budgetary educational institution of the higher education "Omsk state technical university"*

*Luzgina V.B., Prisyadina A.N.*

***UDC** 378*

***GRNTI** 14.35.07, 31.01.05, 31.15.01*

**1. Functional purpose of the program, scope, its restrictions**

The videocourse "Development of multimedia electronic courses in iSpring Suite 8" is intended for use by teachers and developers of electronic multimedia courses as an educational and methodical and reference material, and also for professional development of teachers. The videocourse allows to examine independently the main functions of work of the program, namely:

1. Record and editing audio/video fragments.
2. Insert of multimedia files.
3. Creation and setting up tests.
4. Creation of interactivities.
5. Creation of dialogue exercise machines.
6. Control of appearance and parameters of an electronic course.

During creation of a videocourse "Development of multimedia electronic courses in iSpring Suite 8" author's materials were used: interactivities, tests and video fragments. Materials

of video fragments were developed by means of the program of video capture of the Movavi Suite 11 screen. Video fragments of a course illustrate the main actions of the developer of the electronic training presentations.

Videocourse "Development of multimedia electronic courses in iSpring Suite 8" contains 21 video fragments with the description of the course of performance of the main operations during creation of an electronic multimedia course:

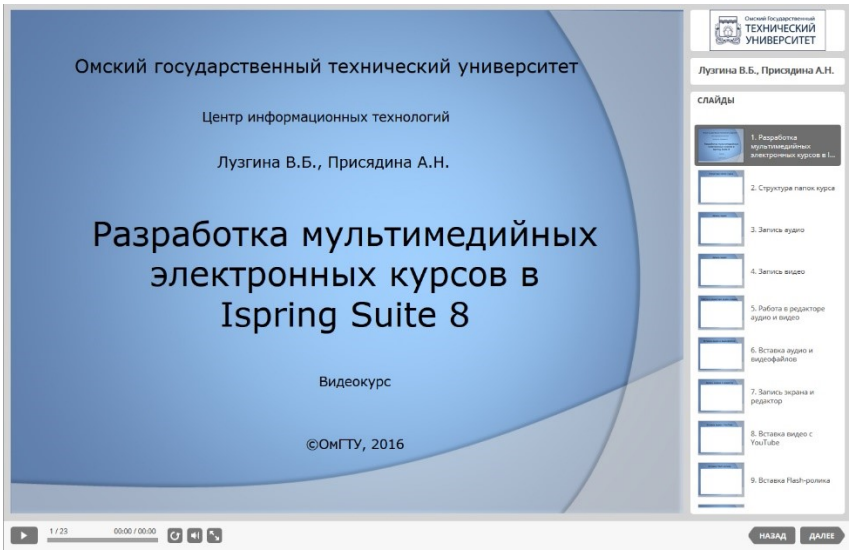



Fig. 1. Videocourse interface

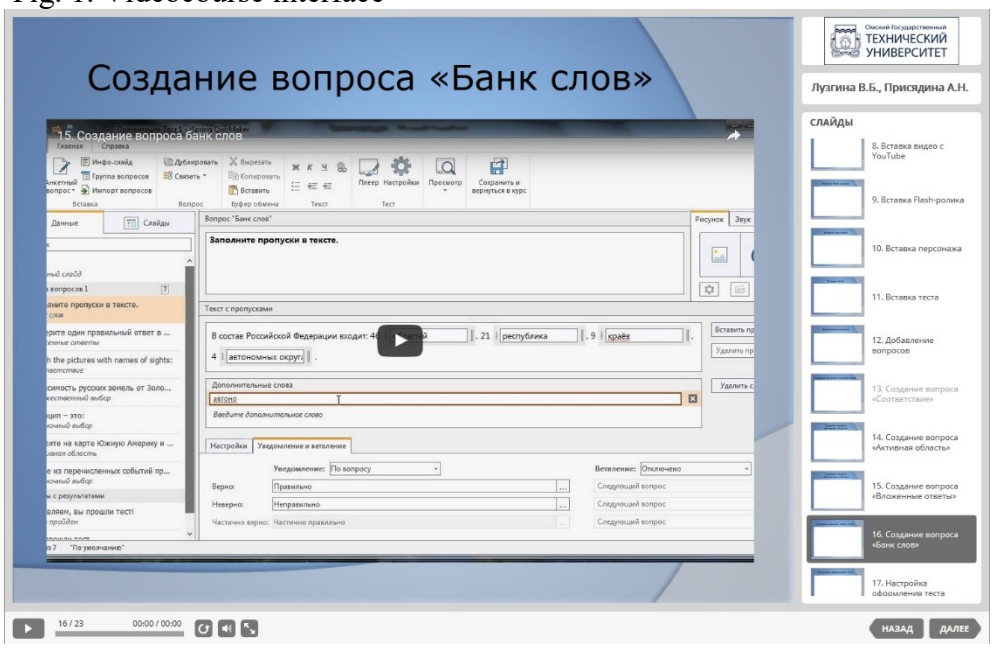



Fig. 2. An example of a slide with a course video fragment

The videocourse is developed by means of the iSpring Suite 8 program, placed in a cloud service of iSpring Cloud. Video fragments are placed on YouTube channel and integrated by exiles to course slides.

Main subjects of a videocourse:

1. Structure of folders of a course.
2. Record of audio.
3. Record of video.
4. Work in the editor of audio and video.
5. Insert of audio and video files.
6. Record of the screen and editor.
7. Video insert with YouTube.
8. Flash-roller insert.

9. Insert of the character.
10. Test insert.
11. Addition of questions.
12. Creation of the question "Compliance".
13. Creation of the question "Active Area".
14. Creation of the question "The Enclosed Answers".
15. Creation of the question "Bank of Words".
16. Control of registration of the test.
17. Review of interactivities.
18. Insert of interactivities. Catalog.
19. Creation of dialogues.
20. Control of appearance of an electronic course.
21. Control of parameters and publication of a course.

Total: 2,73 MB.

The videocourse is approved in Omsk the state technical university at advanced training courses of teachers.

As technical means, for creation of components of a videocourse "Development of multimedia electronic courses in iSpring Suite 8" software products were used: Power Point, iSpring Suite 8, Movavi Video Suite 11. The main advantages of these tools is ease and speed of creation of materials.

**2. The used technical means**

2.1. For development of a videocourse "Development of multimedia electronic courses in iSpring Suite 8" the following equipment rooms and software are necessary:

1. Computer and AMD Phenom (tm) II processor.
2. Random access memory – 4096 MB.
3. Summary space on the hard drive of 1024 MB.
4. Color SVGA monitor of the computer resolution 1024x768 and above.
5. Operating system: Windows 7.
6. iSpring Suite 8.

2.2. For functioning of a videocourse "Development of multimedia electronic courses in iSpring Suite 8" the following equipment rooms and software are necessary:

For viewing on the computer:

19. Computer and Intel/AMD processor of 1 GHz or above.
20. Random access memory – 1024 MV.
21. Free space on the hard drive of 1024 MB.
22. Color SVGA monitor of the computer resolution 1024x768 and above.
23. Operating system: Windows XP/Vista/7/8, Macintosh, Linux.
24. Software: Internet Explorer 6 above, Mozilla Firefox 3.x above, Safari 3 above, Google Chrome, Opera 9.5 above, Adobe Flash Player 10.1 or above.

For viewing on mobile devices:

1. Mobile devices with resolution 480x320 and above.
2. Operating system: Mobile: Android 3.x or higher, iPad, iPad2, The New iPad (iOS 5.x or higher), Windows Phone 7.5 or higher, Windows RT.
3. The software for mobile devices. Desktop: Internet Explorer 9 or higher, Safari 5 or higher, Mozilla Firefox 12 or higher, Opera 11.6 or higher, Google Chrome 18 or higher.

**3. Special conditions of application and requirement of organizational, technical and technological character**

Application of a videocourse "Development of multimedia electronic courses in iSpring Suite 8" is possible in the conditions of a modern educational computer class, and also on mobile devices at network placement of a videocourse with access on the Internet. The multimedia

course is placed in a cloud service of iSpring Cloud and is available according to the reference https://ispri.ng/7NWy.

**4. Conditions of transfer and sale of program documentation**

Videocourse "Development of multimedia electronic courses in iSpring Suite 8" and documentation to it can be transferred to the interested person or the organization on the basis of the contract with OMGTU and authors according to the current legislation.

## ADVERTISING AND TECHNICAL DESCRIPTION "Videocourse" the organization of testing in SDO Prometheus"

*Federal public budgetary educational institution of the higher education "Omsk state technical university"*

*Luzgina V.B., Prisyadina A.N.*

***UDC** 378*

***GRNTI** 14.35.07, 31.01.05, 31.15.01*

**1. Functional purpose of the program, scope, its restrictions**

The videocourse "The organization of testing in SDO "Prometheus" is intended for use by teachers as an educational and methodical and reference material, and also for professional development of teachers. The videocourse allows to examine independently the main functions of work of the program, namely:

7. Creation of tests.
8. Creation of questions.
9. Setting up test.
10. Estimation of students.

During creation of a videocourse "The organization of testing in SDO "Prometheus" author's materials were used: animations and video fragments. Materials of video fragments were developed by means of the program of video capture of the Movavi Suite 11 screen. Video fragments of a course illustrate work of the teacher in system of distance learning.

Videocourse "The organization of testing contains 14 video fragments with the description of the course of performance of the main operations in SDO "Prometheus":

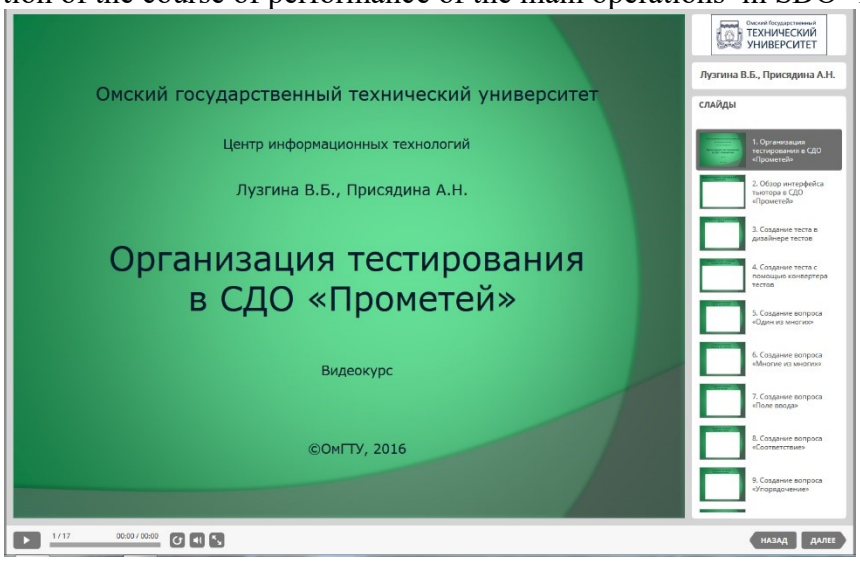



Fig. 1. Videocourse interface

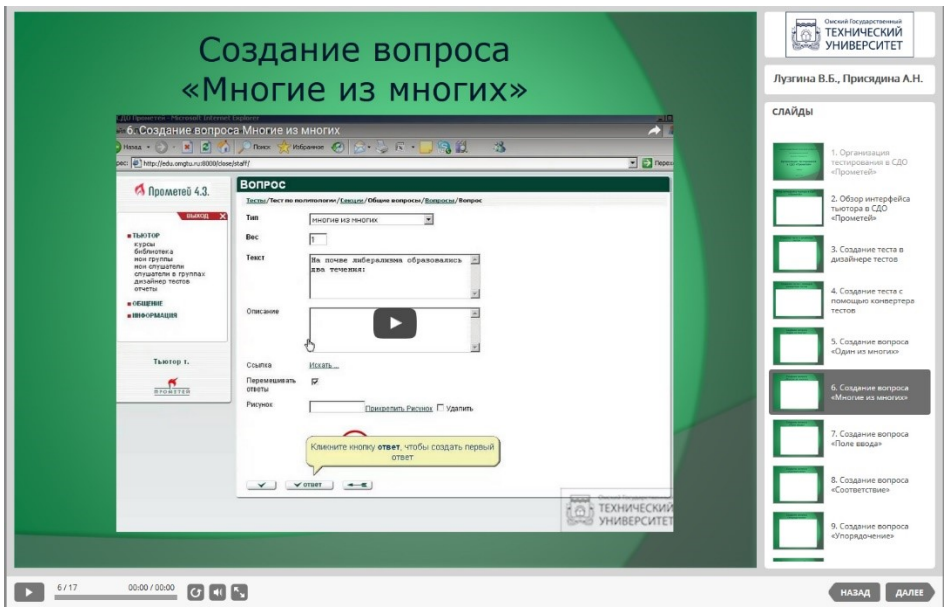



Fig. 2. An example of a slide with a course video fragment

The videocourse is developed by means of the iSpring Suite 8 program, placed in a cloud service of iSpring Cloud. Video fragments are placed on YouTube channel and integrated by exiles to course slides.

Main subjects of a videocourse:

1. The review of the interface of the tutor in SDO "Prometheus.
2. Creation of the test in the designer of tests.
3. Creation of the test by means of the converter of tests.
4. Creation of the question "One of Many".
5. Creation of the question "Many of Many".
6. Creation of the question "Entry field".
7. Creation of the question "Compliance".
8. Creation of the question "Streamlining".
9. Creation of the question "Da-no".
10. Creation of the question "Area in Drawing".
11. Creation of the question "Several Passed Words".
12. Creation of the question "Several Entry Fields".
13. Setting up test.
14. Issue of the admission to group, listener.

Total: 2,70 MB.

The videocourse is approved in Omsk the state technical university at advanced training courses of teachers.

As technical means for creation of components of a videocourse "The organization of testing in SDO "Prometheus" software products were used: Power Point, iSpring Suite 8, Movavi Video Suite 11. The main advantages of these tools is ease and speed of creation of materials.

**2. The used technical means**

2.1. For development of a videocourse "The organization of testing in SDO "Prometheus" the following equipment rooms and software are necessary:

1. Computer and AMD Phenom (tm) II processor.
2. Random access memory – 4096 MB.
3. Summary space on the hard drive of 1024 MB.
4. Color SVGA monitor of the computer resolution
   1024x768 and above.
5. Operating system: Windows 7.
6. iSpring Suite 8.

2.2. For functioning of a videocourse "The organization of testing in SDO "Prometheus" the following equipment rooms and software are necessary:

For viewing on the computer:

25. Computer and Intel/AMD processor of 1 GHz or above.
26. Random access memory – 1024 MV.
27. Free space on the hard drive of 1024 MB.
28. Color SVGA monitor of the computer resolution 1024x768 and above.
29. Operating system: Windows XP/Vista/7/8, Macintosh, Linux.
30. Software: Internet Explorer 6 above, Mozilla Firefox 3.x above, Safari 3 above, Google Chrome, Opera 9.5 above, Adobe Flash Player 10.1 or above.

For viewing on mobile devices:

1. Mobile devices with resolution 480x320 and above.
2. Operating system: Mobile: Android 3.x or higher, iPad, iPad2, The New iPad (iOS 5.x or higher), Windows Phone 7.5 or higher, Windows RT.
3. The software for mobile devices. Desktop: Internet Explorer 9 or higher, Safari 5 or higher, Mozilla Firefox 12 or higher, Opera 11.6 or higher, Google Chrome 18 or higher.

**3. Special conditions of application and requirement of organizational, technical and technological character**

Application of a videocourse "The organization of testing in SDO "Prometheus" is possible in the conditions of a modern educational computer class, and also on mobile devices at network placement of a videocourse with access on the Internet. The multimedia course is placed in a cloud service of iSpring Cloud and is available according to the reference https://ispri.ng/0N5q.

**4. Conditions of transfer and sale of program documentation**

The videocourse "The organization of testing to SDO "Prometheus" and documentation to it can be given to the interested person or the organization on the basis of the contract with OMGTU and authors according to the current legislation.

## ADVERTISING AND TECHNICAL DESCRIPTION "Videocourse" development of materials for multimedia lectures"

*Federal public budgetary educational institution of the higher education "Omsk state technical university"*
*Luzgina V.B., SHishkina E.N.*

***UDC** 378*
***GRNTI** 14.35.07, 50.41.29*

**1. Functional purpose of the program, scope, its restrictions**

The videocourse "Development of materials for multimedia lectures" is intended for use by teachers and developers of electronic multimedia courses as an educational and methodical and reference material, and also for professional development of teachers. The videocourse allows to get acquainted independently with instruments of creation and editing graphic and multimedia objects, namely:

11. processing and optimization of images by means of PowerPoint and Adobe Photoshop;
12. record and processing of audiofiles by means of the Audasity and iSpring Suite 8 programs;
13. record and processing of video fragments by means of the programs Screencast-O-Matic, Movavi Video Suite 11, iSpring Suite 8.

During creation of a videocourse "Development of materials for multimedia lectures" author's drawings and video records were used. Materials of video fragments were developed by means of modules of video capture of the iSpring Cam and Movavi Video Suite 11 screen. Video fragments of a course illustrate the main actions of the developer of creation and processing of images, audio-and video files for multimedia lectures.

Videocourse "Development of materials for multimedia lectures" contains the following materials with the description of the course of performance of the main operations:

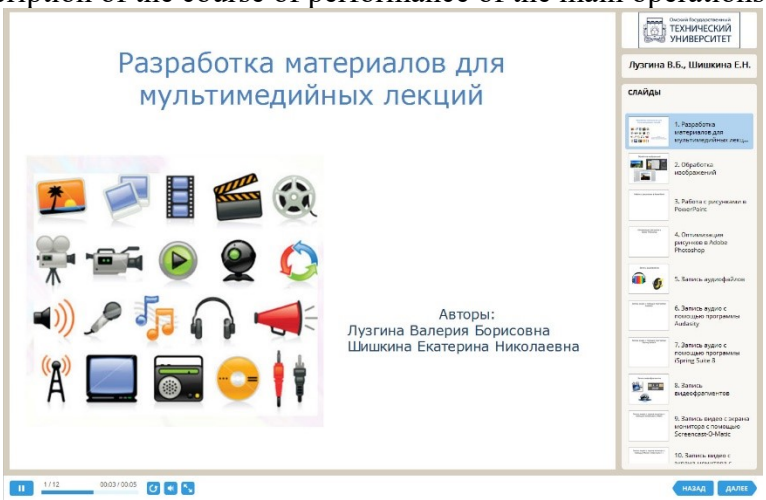



Fig. 1. Videocourse interface

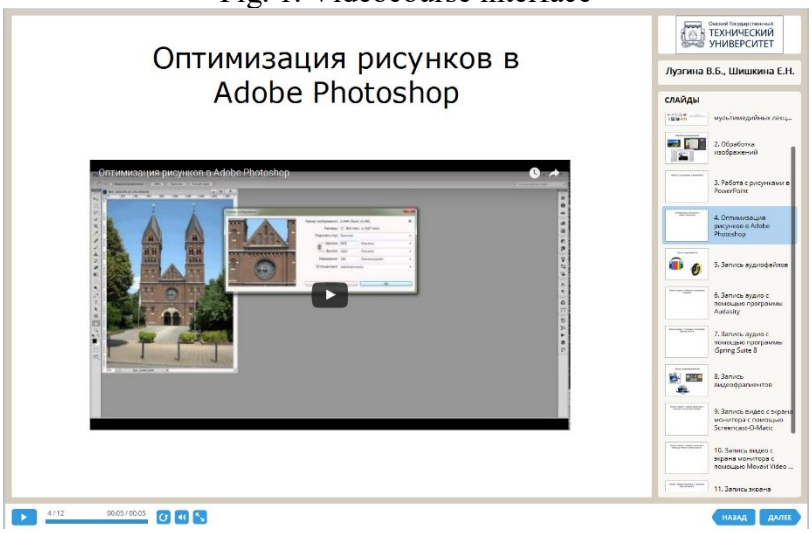



Fig. 2. An example of a slide with a course video fragment

The videocourse is developed by means of the iSpring Suite 8 program, placed in a cloud service of iSpring Cloud and is available according to the reference https://ispri.ng/7vYv. Video fragments are placed on Youtube channel and integrated by exiles to course slides.

Main subjects of a videocourse:

1. Work with drawings in PowerPoint.
2. Optimization of drawings in Adobe Photoshop.
3. Record of audio by means of the Audasity program.
4. Record of audio by means of the iSpring Suite 8 program.
5. Record of video from the monitor screen by means of Screencast-O-Matic.
6. Record of video from the monitor screen by means of Movavi Video Suite 11.
7. Record of the screen of the monitor by means of iSpring Suite 8.

Total: 5,35 MB.

The videocourse is approved in Omsk the state technical university at advanced training courses of teachers.

As technical means for creation of components of a videocourse "Development of materials for multimedia lectures" software products were used: Power Point, iSpring Suite 8,

Adobe Photoshop, Audasity, Screencast-O-Matic, Movavi Video Suite 11. The main advantages of these tools is ease and speed of creation of materials.

**2. The used technical means**

2.1. For development of a videocourse "Development of materials for multimedia lectures" the following equipment rooms and software are necessary:

1. Computer and AMD Phenom (tm) II processor.
2. Random access memory – 4096 MB.
3. Summary space on the hard drive of 1024 MB.
4. Color SVGA monitor of the computer resolution
1024x768 and above.
5. Operating system: Windows 7.
6. iSpring Suite 8.
7. Movavi Video Suite 11.

2.2. For functioning of a videocourse "Development of materials for multimedia lectures" the following equipment rooms and software are necessary:

For viewing on the computer:

31. Computer and Intel/AMD processor of 1 GHz or above.
32. Random access memory – 1024 MV.
33. Free space on the hard drive of 1024 MB.
34. Color SVGA monitor of the computer resolution 1024x768 and above.
35. Operating system: Windows XP/Vista/7/8, Macintosh, Linux.
36. Software: Internet Explorer 6 above, Mozilla Firefox 3.x above, Safari 3 above, Google Chrome, Opera 9.5 above, Adobe Flash Player 10.1 or above.

For viewing on mobile devices:

1. Mobile devices with resolution 480x320 and above.
2. Operating system: Mobile: Android 3.x or higher, iPad, iPad2, The New iPad (iOS 5.x or higher), Windows Phone 7.5 or higher, Windows RT.
3. The software for mobile devices. Desktop: Internet Explorer 9 or higher, Safari 5 or higher, Mozilla Firefox 12 or higher, Opera 11.6 or higher, Google Chrome 18 or higher.

**3. Special conditions of application and requirement of organizational, technical and technological character**

Application of a videocourse "Development of materials for multimedia lectures" is possible in the conditions of a modern educational computer class, and also on mobile devices at network placement of a videocourse with access on the Internet.

**4. Conditions of transfer and sale of program documentation**

Videocourse "Development of materials for multimedia lectures" and documentation to it can be transferred to the interested person or the organization on the basis of the contract with OMGTU and authors according to the current legislation.

## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic educational resource "Bases of Information Security" direction of preparation 10.05.03 "Information security"

*Federal public budgetary educational institution of the higher education "Ryazan state radio engineering university"*

*Przhegorlinskij V.N. . Fomina K.YU., Majorov G.O.*

***UDC** 378*

***GRNTI** 14.35.07, 20.15.00*

**1. Functional purpose of a product, scope, its restrictions**

Today creation of qualitative and effective electronic educational resources is one of the main tasks in the field of education informatization.

The electronic educational resource "Bases of Information Security" of discipline of "A basis of information security" represents an electronic educational resource for the students who are trained in the Information security direction for specialties of higher education 10.05.01 – Computer safety, 10.05.03 – Information security of the automated systems. It can be useful also to the experts wishing to improve the skills or to deepen the knowledge in the field of safety of personal information.

The maintenance of this resource will allow trained to gain theoretical knowledge in the field of bases of information security, and also to check the gained knowledge having passed test.

This electronic educational resource is intended for system of additional professional education. Trainees are provided with a set of electronic educational and methodical materials, have an opportunity to check the knowledge, and also to look through results of the tests. This resource allows to provide support of teachers for internal and remote forms of education, significantly having lowered loading. Loading of a remote course requires existence of connection of the computer of the user to the Internet or access to a local network of higher education institution if the resource is on the server of system of distance learning.

**2. The used technical means**

Requirements to the personal computer of the user for work with a remote training course are presented in the table.

| | Office | |
|---|---|---|
| | At least | Optimum |
| Case (power supply unit) | ASUS P5Q PRO of 350 W | ASUS P5Q PRO of 350 W |
| Maternal payment (chipset) | ASUS P5Q PRO(CPU Intel), NVIDIA GeForce 560GTi (CPU AMD) iliintelg41 + ICH7 (CPU Intel) | ASUS P5Q PRO(CPU Intel), NVIDIA GeForce 560GTi (CPU AMD) iliintelg41 + ICH7 (CPU Intel) |
| CCP | AMD Athlon II X2 240 or Intel Pentium Dual-Core E2180 | AMD Athlon II X2 255 or Intel Pentium Dual-Core E5300 |
| RAM | 2 GB DDR2 800 | 4 GB DDR2 800 |
| Hard drive (HDD) | SATA 250 GB, 7200 rpm | SATA 500 GB, 7200 rpm |
| Network, audio-and graphic (video) of a payment | Integrated | Integrated |

Work with a remote course requires existence of connection of the computer of the user to the Internet and access to the server of system of distance learning of higher education institution on which this course is placed.

**3. Special conditions and requirements of organizational, technical and technological character**

This EOR consists from 3chasteyi has the following structure:

Chast1. National security of the Russian Federation

Chapter 1. Concept of national security

1.1. The basic concepts in the field of ensuring national security.

1.2. The legislation of the Russian Federation in the field of safety and its development

1.3. National interests of the Russian Federation and strategic national priorities.

Chapter 2. Ensuring national security of the Russian Federation.

2.1. System, forces and means of ensuring of national security.

2.2. Bases of a state policy in the field of ensuring national security.

2.3. Spheres of activity of society and state, national interests of the Russian Federation and components of national security.

2.4. A role of information security in ensuring national security of the Russian Federation.

Part 2. Bases of a state policy of ensuring information security of the Russian Federation

Chapter 3. Information security as a condition of security of national interests in the information sphere.

3.1. The basic concepts in the field of information security their interrelation.

3.2. National interests of the Russian Federation in the information sphere

Chapter 4. Threats of information security of the Russian Federation.

4.1. Types of threats of information security of the Russian Federation.

4.2. Threats to constitutional rights and freedoms of the person and the citizen in the field of spiritual life and information activities, to individual, group and public consciousness, spiritual revival of Russia.

4.3. Threats to information support of a state policy of the Russian Federation.

4.4. Threats to development of the domestic industry of information, including the industry of means of informatization, telecommunication and communication, to ensuring needs of domestic market for its production and an entry of this production into the world market, and also ensuring accumulation, safety and effective use of domestic information resources.

4.5. Threats to security of the information and telecommunication means and systems which both are already developed, and created in the territory of Russia.

4.6. Sources of threats of information security of the Russian Federation.

Chapter 5. Principles and priority directions of a state policy of ensuring information security.

5.1. The principles and the priority directions of a state policy of ensuring information security of the Russian Federation, priority actions on its realization.

5.2. The main activities on ensuring national interests of the Russian Federation in the information sphere

5.3. Activities of the state for ensuring information security of the Russian Federation.

5.4. Priority direction of a state policy of ensuring information security of the Russian Federation and measure for its realization.

5.5. Priority actions on realization of a state policy of ensuring information security of the Russian Federation.

Chapter 6. State information policy of the Russian Federation

6.1. Legal fundamentals of the state information policy of the Russian Federation.

6.2. Purpose, tasks and principles of development of information society in the Russian Federation.

6.3. The main directions of development of information society in the Russian Federation.

Part 3. Ensuring information security of the Russian Federation

Chapter 7. Methods of ensuring information security of the Russian Federation.

7.1. General methods of ensuring information security of the Russian Federation.

7.2. Features of ensuring information security of the Russian Federation in various spheres of activity of society and the state.

7.3. International cooperation of the Russian Federation in ensuring information security.

Chapter 8. System of ensuring information security of the Russian Federation.

8.1. Main functions of system of ensuring information security of the Russian Federation.

8.2. Organizational structure of system of ensuring information security of the Russian Federation.

8.3. Ensuring information security of subjects of the Russian Federation.

After a kazhdoychasta there is an intermediate testing, there is also a final test consisting of questions according to all sections.

Development of EOR was carried out to Moodle learning management system.

Materials of this resource can be studied having followed the link in the web browser. It is impossible to keep these materials on the local computer for the press and further acquaintance as it will violate copyright. Interactive elements (magazines of users, tests) allow to carry out correction of a trajectory of training, to check the level of knowledge. For work with a remote course it is recommended to use the MozillaFirefox, GoogleChrome or Opera browser.

This resource allows to provide support of teachers for internal and remote forms of education, significantly having lowered loading.

**4. Conditions of transfer of documentation or its sale**

Distribution and use of this resource can be carried out only with the consent of authors.

The resource can be transferred to the interested person or the organization on the basis of the contract according to the current legislation.

Concerning acquisition it is possible to address in FGBOU VPO "The Ryazan state radio engineering university".

Address: 390005, Ryazan Gagarin St., 59/1

Phone: 46-04-28

E-mail: VNPR@rsreu.ru

## ADVERTISING AND TECHNICAL DESCRIPTION "A complex of GPSS procedures for generation of random variables on the basis of the Mersenn's Whirlwind generator

*Federal public budgetary educational institution of the higher education "Omsk state technical university"*

*Zadorozhnyj V.N., Zaharenkova T.R., Myasishchev S.V.*

***UDC** 004.421.5*

***GRNTI** 20.53.21*

**3. Functional purpose of the program, scope, its restrictions**

The complex of GPSS procedures for generation of random variables on the basis of the Mersenn's Whirlwind generator is intended for high-precision generation of pseudorandom sizes with the set laws of distribution of probabilities.

The complex of GPSS procedures connects a random number generator the "Mersenn's Whirlwind" written in language C ++ – the most widespread 32-bit version of the MT generator providing length of the period 219937 – 1 ≈106000. The dll-function received by its compilation realized in the CDECL standard (the requirement of the PLUS language of the GPSS World system) called mtrand.dll is located in the GPSS World folder. By a call of the mtrand.dll function the whole pseudorandom number which is evenly distributed in the range from 0 to (231 – 1) comes back. In fig. 1 the example of the program with a call of the MtRand PLUS procedure (), causing, in turn, the mtrand.dll function for generation of standard random numbers is given.

The MtRand PLUS procedure () realizes the standard pseudorandom size (a basic random variable – BSV) which is evenly distributed in the range from 0 to 1 with the sampling step equal 1 / (231 - 1) here. Such step of sampling with a stock provides nine exact decimal figures of BSV after a comma. It considerably increases the accuracy of realization of distributions of probabilities, including with heavy tails (critical to the accuracy of representation of BSV, [1]) as usually in GPSS BSV only with six figures after a comma is realized.

```
GENERATE  1
SAVEVALUE XN1,(MtRand())
TERMINATE 1

PROCEDURE MtRand() BEGIN
TEMPORARY Z;
Z = Call("mtrand.dll", "?nextNum@@YAHXZ");
Z = Z/2147483647;
RETURN (Z);
END;
```

Figure 1 – the GPSS program with the MtRand procedure caused from it ()

The high-precision high-quality realization of standard uniform distribution on a piece [0, 1] with a step of sampling 2–31 and period long 219937 – 1, exponential distribution, scale of distribution, normal and lognormalny distributions, Pareto, Veybull, Poisson's distributions is enabled. Entrance these (parameters) of distributions are defined proceeding from a type of distribution. So for example, entrance data of the GPSS procedure realizing high-precision distribution of Pareto the parameter of scale of Arg1 (parameter K) and parameter of the Arg2 form are (parameter $\alpha$). The histogram of distribution of Pareto received as a result of performance of the GPSS procedure enabling the high-precision realization of distribution of Pareto is given in fig. 2.

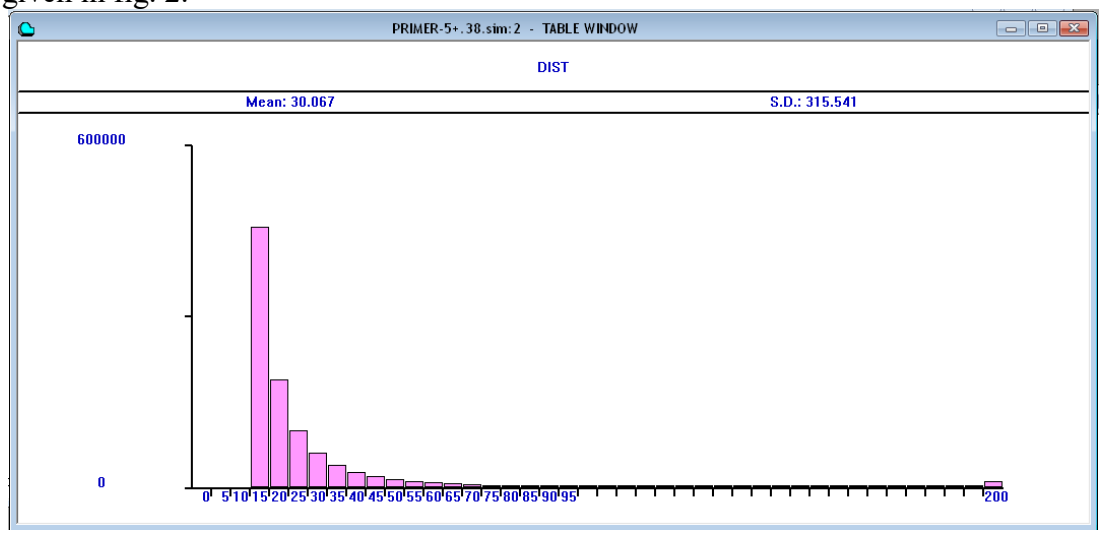



Figure 2 – The histogram of the realized Pareto's distribution at $K = 10$, $\alpha = 1{,}5$.

The output data of GPSS procedure are the random variables distributed on one of laws of distribution of the probabilities stated above.

Also there is a possibility of inclusion in library of high-precision high-quality realization of other distributions on the basis of the Mersenn's Whirlwind generator.

As a software of development of a complex of GPSS procedures the GPSS system, the programming language used at the same time – the Plus language was chosen.

The complex of GPSS procedures can be applied to the numerical solution of complex probabilistic challenges by methods of Monte-Carlo.

**2. The used technical means**

For performance of a complex of GPSS procedures for generation of random numbers on the basis of the Mersenn's Whirlwind generator, the following equipment rooms and software are required:

16. ° C: Microsoft Windows.
17. COMPUTER type: IBM PC compatible personal computer.
18. Processor frequency – is recommended from 1 GHz.

19. Random access memory – 512 MB and more.
20. Existence not less than 10 MB of an empty seat on a disk.

**3. Special conditions of application and requirement of organizational, technical and technological character**

Conditions of application have to conform to the modern requirements imposed to operation of the software. Performance of a complex of GPSS procedures requires existence of system of modeling of GPSS World.

**4. Conditions of transfer and sale of program documentation**

Complex of GPSS procedures for generation of random numbers on the basis of the Mersenn's Whirlwind generator and documentation to it can be transferred to the interested person or the organization on the basis of the contract with OMGTU and authors according to the current legislation.

**List of references**

1. Zadorozhny, V. N. Problems of generation of random variables with fractal distributions//V. N. Zadorozhny, O. I. Kutuzov. – Omsk scientific bulletin. – 2012. – No. 3 (113) – Page 20-24

## ADVERTISING AND TECHNICAL DESCRIPTION "Global the Internet — Broadcasting of the Curing Sessions as a New Way Vosstanovitelno — Improving Services"

*Gordievskij V.V.*

***UDC** 004*
***GRNTI** 14.01.11*

**1. A functional purpose of the Avant-project "Global the Internet – Broadcasting of the curing sessions as a new way vosstanovitelno – improving services", area of its application and its restriction.**

**General information and justification of the chosen decision**

In our developed, but unpredictable society, in cases of rendering to the person of necessary emergency medical care or urgent treatment, for a variety of reasons, not always happens possible to make it timely that very often leads of people to death.

Copyright as object of intellectual property **of a new way of rendering services** is hereby declared and deposited **with areas vosstanovitelno – improving tselitelsky the practician,** by transfer to the Subscriber of a distantny improving session by means of the Global Internet, television networks, networks of mobile and wire stations, and also through Satellite communication and other any kinds of send-receive technical communications.

***This way, in the prospect of development, is urged to make break in vosstanovitelno – improving practicians of the future as a new method of rendering the salutary help.***

Innovation of a described below way as improvement method, fast round-the-clock availability, and also effective skill to communicate by means of transfer vosstanovitelno – improving sessions the existing modern types of communication is, in any point of our Planet online.

***The new way is reasonable, and the technical solution is created on the theory of Physical vacuum, and all this system received the name "EYa" ("Energy of consciousness").***

Works on creation of relaying complex and universal installation (in use "Geniyrator") were conducted from 2009 to 2013. Served as the basis for the choice of a way and statement of works in implementation of technological, technical, conceptual and constructive solutions:

Own view of understanding of "BASIS", use in construct (know-how), search and collection of information, its analytics, search and studying of experience of handiworks, staff of institutes, enterprises the, and establishments occupied in the field of Health care including. Own experience of hospitalization and application of nonconventional methods of healing in improvement.

1. The analysis of the appearing new ideas, hypotheses, "know-how" which had rational grain of invention in this direction.

2. Research and trial operation as earlier created, and the new devices and the equipment occupied in the field of improvement.

3. Statement of experiments in researches and receiving practical results on "objects" live and not wildlife.

4. Obtaining practical proofs trial sessions on the created author's Gniyratorakh models with Water and skilled vosstanovitelno - salutary research practice with volunteers.

2**. The used technical means**

The "device" concentrating and transferring energy of "the Place of Force" represents the "Generator" assembled in a complex of shaped structures of the minerals of nonclassical geometry which are in certain spatial dependence relatively each other at which interaction, it is created interrelation of polyarnost with the crystals and sacral fragments of "the Place of Force" creating in turn which are inside, one uniform interrelation which then will be transformed to "the power density" in the form of the Holographic volume figure of the concentrated energy *called "the LIVE MATRIX".*

*"LIVE MATRIX" in interrelation with a rhythm of Earth and it is thin - field structure of the Recipient "gives rise" to the concentrated "BASIS" which is quickly growing power, in the form of a spherical or ovoid plazmoid invisible not to an aided eye.* Behind that, this "power substance" creates conscious power interrelation with the Recipient and his present pathologies which is accepted by its power field structure as the natural vital field of dwelling.

*- And, its influence ALWAYS "works reasonably" and carries out function only of the Positive BEGINNING!*

Condition of the Project

Five working models of the generating relaying complexes which practical results of tests, confirmed expediency of application of the chosen way, fidelity of the technological decisions and a know-how transformed subsequently in an author's technique are created. It is carried out, more than one thousand sessions on volunteers, different age groups and with various pathologies which results are recorded in a personal videoarchive. Construction of the relaying Center and programming of the EYa system is not complete in a type of lack of financing.

**Project purpose**

To introduce essentially new way of conducting recovery improvement by method of transfer to the Subscriber of an improving session by means of the Global Internet, as well as television networks, networks of mobile and wire stations, and also the intended Satellite communication and other types of technical communications for information transfer, at the same time decisive ecological, economic, demographic and social tasks.

**3. Special conditions and requirements of organizational, technical and technological character**

On the website created in real time, the Subscriber / addressed, having at itself or people close to it the "problem" connected with feeling sick of the mental or physical plan will visit the created website, having studied detailed information and having registered, will receive "a skaypovy key" (number of access) for communication with the Automated center where, according to its data, the program forms conditional idea of the personality by date of its birth and a floor, having carried it in a certain group and having created its generalized a portrait, combining his specific features and dependences, in voice and text types of information will

report about further actions; having offered the list of problems or symptoms where the Subscriber will choose the at choice. Having designated it click of the cursor, "AMBULANCE", "FAMILY SESSION", "GENERAL IMPROVING SESSION" or "TREATMENT WITH MAINTENANCE" will pass to sections. After the choice, one of which, will see the START / CANCELLATION team itself also will start or will stop broadcast of a session. In case of emergency, such option as "AMBULANCE" - will join without registration and preliminary processing.

But, in SPECIAL CASES when there is a HEAVY ILLNESS when all appeals to official medicine or other experts were vain, appointment and rendering the necessary help will be made through consultation and individual maintenance by the EXPERT - the PROOFREADER. No additional special conditions and requirements, except specified are shown.

**Solution of an objective of the Project**

The objective is solved by introduction of a new type of representation of services as new way the Internet - procedures in the field of recovery improvement.

**Term of implementation of the Project**

The project is ready to realization. Creation of programming and construction of the Center and start in work as service 48 Subscribers/hour - no more than 10-12 months from the moment of the beginning of financing in necessary volume.

Exit to simultaneous service of 1000 Subscribers/days - by 20th month of implementation of the Project from the moment of the beginning of financing in necessary volume.

*Simultaneous service of 10 000 needing Recipients in days,* with an exit to the service volume of service (without expanded network of branches) – by the end of the 3rd year of date of the first design broadcasting.

**Short description of understanding, way and technique of use of the EYa system**

***PREFACE***

The purpose of the real work is ***the concept statement for understanding of an essence of "BASIS"*** which is the base of development of life on Earth and in particular, "A magic phenomenon" ethnic improving the practician from Antiquity to the Modern world. And in the light of its development, present to testify the realized understanding of the principles on the basis of the received practical results as new way and method of improvement which creator, the author of this work is.

***Energy on which all classical sciences are based and also applied - astrology, a kosmoenergetika, bio-energetics, homeopathy, etc. which penetrates all space of matter, is a universe Basis. Energy, existence and which importance degree, people began to realize only in the last decade.***

Ethnic, original and nonconventional methods of healing, as well as modern science and all medicine, are united uniform by the invisible, but already registered modern devices, **a power information field of Matter.**

Mysterious for us, it was not so mysterious for ancient at all. Did not doubt that the whole world is penetrated **by Vital Force,** called it differently. In the Chinese philosophy – Qi or Chi, in induizme-Ruakh, in Christianity - the Holy Spirit. Apparently, this vital energy was meant also by scientists of the last centuries – when spoke about air, magnetism, vital energy, energy Vril, the Odichesky force or Aude (Carle Reichenbach's) energy, Z-radiation (Alexander Chizhevsky), Orgone (Wilhelm Raich), physical vacuum (Paul Dirac), to energy of time (Nikolay Kozyrev), hronalny energy (Albert Veynik), Supersile (Paul Davies) ….

In 1989, in "Reports of Academy of Sciences" there was Anatoly Fedorovich Okhatrin's article about opening of a new particle which he called "microlepton".

**In alchemy which part is the chemistry as science this particle is called "Ana" (1 electron is 144 000 000 Ana).**

And quite recently, in the 1995th, for researches in the field of subatomic particles Americans Martin Pearl and Frederik Rayns got the Nobel Prize. It should be noted that the theory of physical vacuum, in the substantial sense, is not "the new theory" as it was known

many thousands years ago that all material things appeared from "Great Emptiness" – physical vacuum as would tell modern physics. A difference between ancient knowledge and modern science in approach to the studied subject.

The concept of physical vacuum united the subatomic and subkvanatovy level of the organization of matter, it includes area of matter of the "empty space" (Zeldovich) possessing a certain structure of which "elementary particles" and physical fields are born/are formed (quanta of fields – aksemoron).

In biology - controlling in the period of an embryogenesis defining constancy (az) of structure, both functions of cages, and fabrics (AG Gurvich, 1944). In cosmology (FV) represents a gravity basis (SD of Sugars).

In quantum electrodynamics entering the main equations describing interaction of charges (Landau, Akhiyezer) as well as in the theory of elementary particles is base of all models of a structure of matter - the extralight elementary particles possessing the characteristics similar to the torsion, aksionny, spinor fields.

The hypothesis of existence of smaller particles which are several orders less than electrons, for the first time, **in modern academic science** was formulated by J. Maxwell in the 19th century, and systematized by M. Gell-Mack in 1953. Already in the 1967th S. Weinberg and A. Salam **opened their weak interaction**.

Professor Mr. Kartianu, the expert, famous in Romania, in radio electronics, being engaged in studying of the problems connected with information transfer the waves radiated by a brain of the person came to a conclusion as the frequency of these waves coincides with the frequency of waves of a resonant contour "The earth — an ionosphere".

The scientist considers that waves which frequency does not exceed 8–9 Hz and which are capable to get through thickness of the earth, water and metal are carriers of "telepathic information", as well as other EM of a wave of low and average frequency (DV range including).

*Changes of equilibrium fluctuations of structure of "BASIS" of physical vacuum on our Planet, in combination with other not favorable factors, influences us and leads to changes or distortions of thin power fields of an organism, leaders interrelation to violations of exchange processes in cages and fabrics that inevitably leads to development of diseases.*

My experiments with animals (dogs, cats, fishes), and also Water were not numerous. But even these single experiences, as well as numerous experiences of other researchers, show that it is possible to carry out contactless medical impact not only on the person, but also on representatives of fauna including plants.

Moreover, in a human body there are not only processes of "cold nuclear synthesis", as well as in other live organisms, is experimentally proved by the academic science still in 60 - x years of the 20th century - "The spectral analysis of composition of fabrics in aspect of a psychological stress" of VS Zhuravlev (60 e years of the USSR and other researchers from the different countries), but also processes of the nuclear synthesis operated by "subconsciousness" for power supply of an organism, obtained the evidence - distinction of quantity of potrebny food for dogs, primacies, people with low I.Q. and intellectuals

SHORT DESCRIPTION OF THE PRINCIPLE OF WORK OF THE EYA SYSTEM

The repeater containing 12 independent blocks by means of the VEB camera broadcasts video signal in SKYPE or mobile communication (phone = phone, the computer = phone) which carry out by transfer, function of "the ADDRESS LINE", during broadcast of a medical session from "the Place of Force" or its fragment the address of the contacted Subscriber, by means of the special sending device - the energy concentrator.

Fragmentary - each of 12 blocks is focused on "the vibration range" of the person who is adjusted on a certain Chakra and automatic individual tuning for thin bodies of the Subscriber which is performed by means of an exchange and reading of information via the interrelation filter of the "Live Matrix" contacting with a condition of an individual power and physiological field portrait of the person and which, during broadcast of a session is corrected, leveled and improves in cases of its violation, easing or distortion.

FROM WHERE ENERGY CONCENTRATES?

The known fact, our planet has power points (natural "Places of Force") which exert versatile impact on the person who is in it. First, in these parts people always felt better: gained strength, got rid of all diseases... where in these fertile places there was an active recharge of an organism by improving force carrying out harmonization of the relations of the person with world around. And secondly, shamans are the people blessed with the special gift of vision of other worlds claimed that in "Places of Force" it is simpler to them to come into direct contact with spirits and deities. Later in such places chapels, pagodas, mortars were built, temples and monasteries were put. And that is interesting, the prayers said in them in the form of the address, actually helped – as though, "to them here indeed, it is simpler to reach heaven".

Today's researches confirm that in these sacral places actually mental processes become more active, there is closer contact of human consciousness with the Information field of Space and Earth. But also, cases of negative impact of some power places where energy loss is always followed by bad feelings, a headache, nausea or dizziness are known. In ours cases broadcasting to the Subscriber is carried out from such places or through fragments (as the isolated keepers of information) taken only from "the Place of Force" exerting only salutary impacts on health of the person.

Residents of the cities, owing to remoteness, physical inability or other insuperable reasons, cannot visit such places and having felt an indisposition in the form of weakness, resort to artificial stimulators that finally leads to a final breakdown - to chronic fatigue and diseases.

This problem is solved by transfer of the direct concentrated power signal of "the Place of Force" through the automated control center by means of the generating device of the EYa system *(Energy of consciousness"*) this signal which is carrying out broadcasting by means of Modern communications of communication on demand to each needing Subscriber (Recipient), in every spot on the globe and online.

The started mechanism with high functionality of all cages and their high activity, increases the immune status of system of activity resisting not only to internal physiological problems, but also external power-information violation of the biological field.

*Erasing recovery sessions the present karmic processes and the various acquired or inherited programs (in a prostonarodiya - a malefice, damage, damnations, etc.) density of a biofield of the person becomes operated by own consciousness being a board (cover) from adverse effects with which the human community teems.*

Also, throughout formation, concentration and relayings are considered – planetarno - astronomical, light, temperature, torsion and field, radio and other necessary aspects for receiving a recovery session. The energy balance restored in an organism reconstructs an organism from within, having relieved it of diseases, begins to form rejuvenation signs, such as, "a pobeleniye of proteins" of eyes (restoration of function of a liver), elasticity and rejuvenation of skin. Supporting such power level, the person has a chance to move a level of duration of the biological maximum more than 150 years.

**4. Conditions of transfer of sessions or sale of the transmitting channel to institutions occupied in the field of improvement or treatment**

Transfer condition vosstanovitelno – improving sessions is the contract of purchase and sale signed between the author Gordiyevsky V. V. and interested party.

# ADVERTISING AND TECHNICAL DESCRIPTION "Imitating model of processing of echo signals group the concentrated purposes in the SDTs mode of survey RLS"

*Military academy of army antiaircraft defense*
*Armed forces of the Russian Federation*
*of Marshall of the Soviet Union of A. M. Vasilevsky*
*CHizhov A.A., Burbiya A.*

***UDC*** *621.399.96*
***GRNTI*** *50. 05:15, 50.41.23*

## 1. Functional purpose of the program, area of its application, its restriction

### 1. Purpose of the program

The settlement and analytical program is intended for application in scientific experiments on research and the analysis of properties of radar echo signals for resolution increase on range. In the program a number of algorithms which application allows researchers to gain an impression about potential resolution of RLS in the SDTs mode at application of perspective and traditional ways of permission of air targets is realized.

The program is focused on the solution of the following task – check of operability of the developed way of permission on range of the separate purposes from structure group.

Short description of work

The program represents set of consistently appearing dialogue forms with a possibility of input of parameters of model.

The SDTs system represents a way of processing of the radar information consisting in suppression (rezhektion) of hindrances from motionless (slowly moving) undesirable objects and allocation of signals of moving targets. Signals from an exit of the SDTs system are exposed to further processing for the purpose of the solution of a problem of detection or are directly reflected in the indicator screen (the decision on detection of the purpose is made in this case by the operator).

Results modeling of the SDTs system:

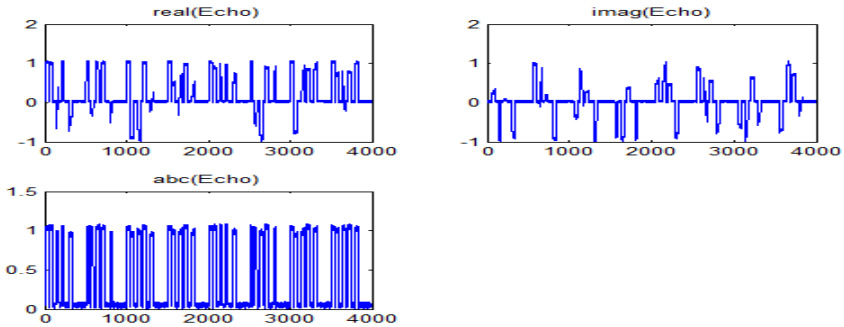



Figure 1.1 – Useful signal of 5 purposes (simple signal)

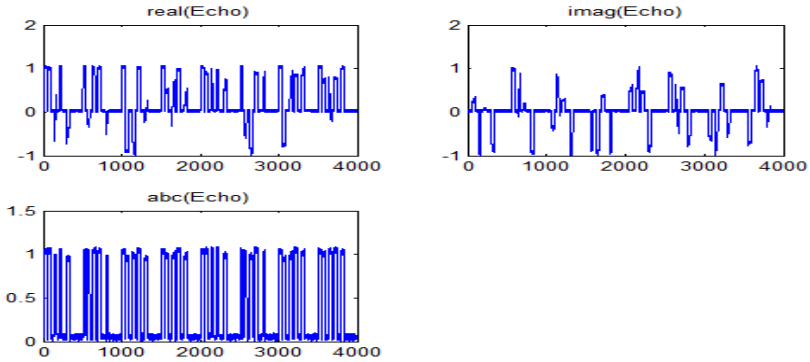



Figure 1.2 – The reflected signal at ATsP exit

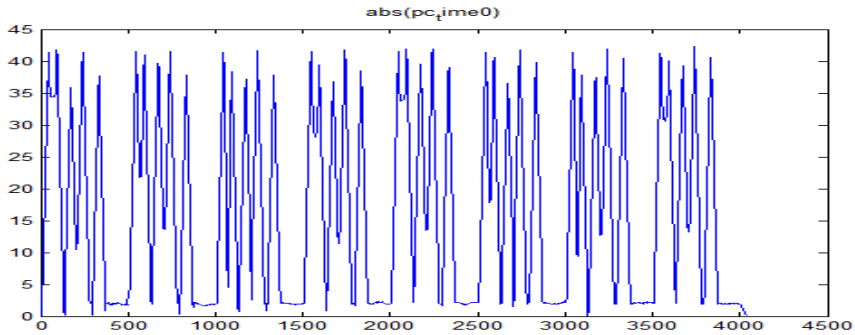
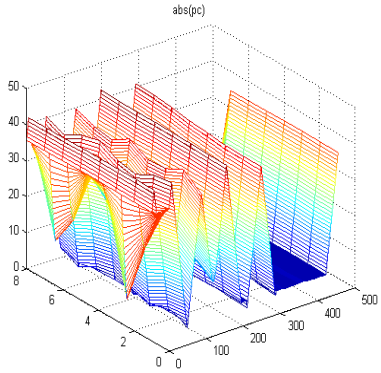



Figure 1.3 – A signal at KOF exit (the coordinated filter)



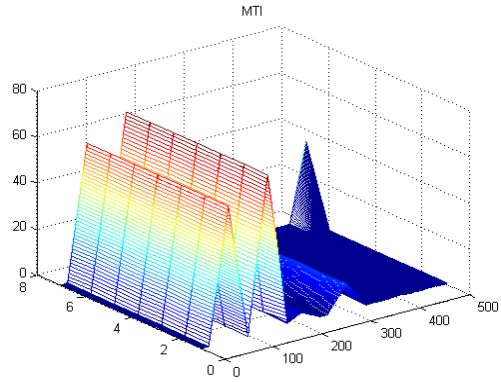




Figure 1.4 – on SDTs entrance Figure 1.5 – at SDTs exit

Results modeling of the SDTs system (LChM signal, 3 purposes):

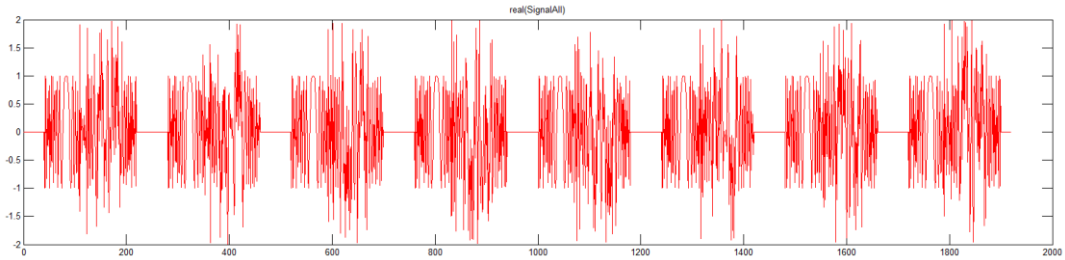



Figure 1.6 – Useful signal of 3 purposes (LChM signal)

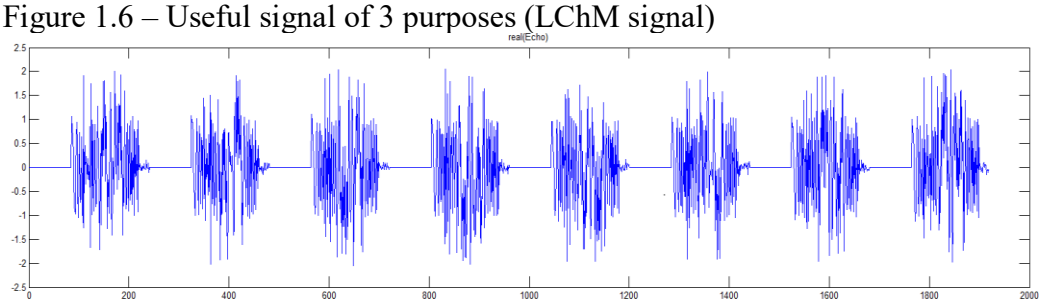


Figure 1.7 – The reflected signal at ATsP exit

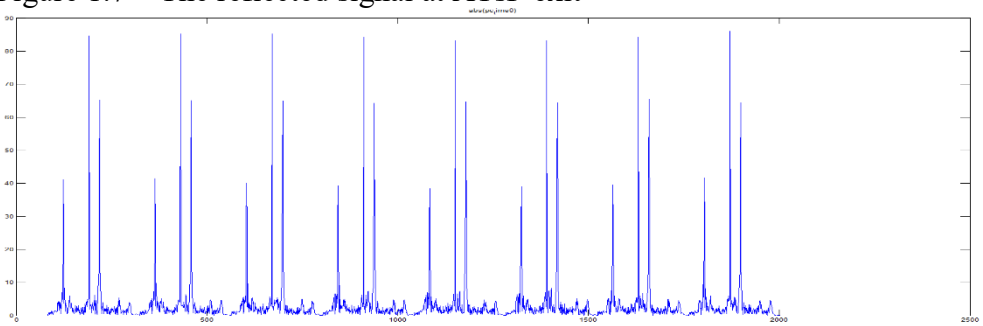
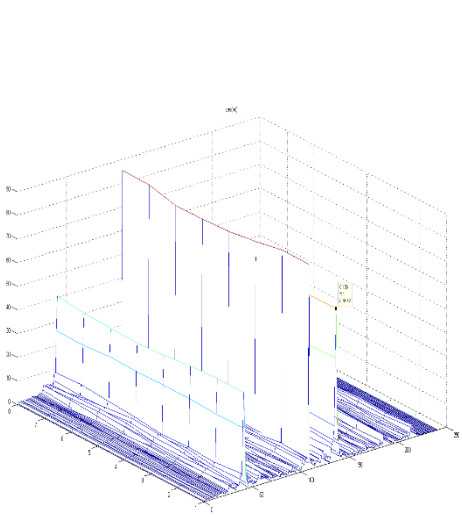


Figure 1.8 – A signal at KOF exit (the coordinated filter)



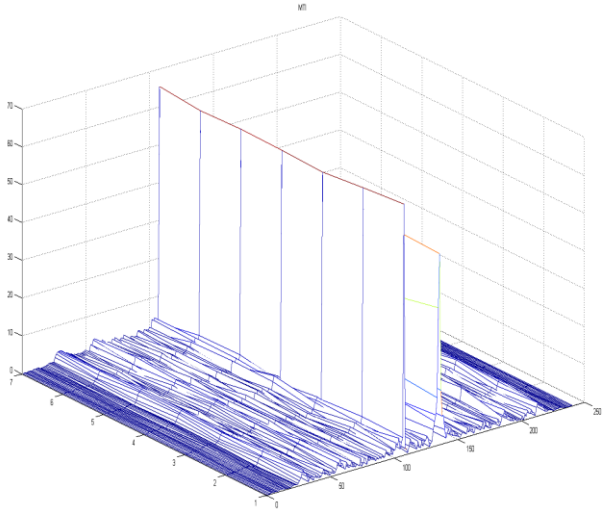


Figure 1.9 – on SDTs entrance Figure 1.10 – at SDTs exit

**Program scope**

The tool Matlab R2010a programming environment was applied to development of this program.

Restrictions of use of the program

For normal functioning of the program the following requirements to hardware-software part of a workplace of the user are imposed:

minimum:

Pentium II, RAM – 256 Mb, Video> 128 Mb

Display resolution: 800 x 600, 32 bit color

the place on the hard drive: 4Mb

Microsoft Windows XP

recommended:

Pentium IV, RAM – 1Gb, Video> 125 Mb

display resolution: 1024 x 768, 32 bit color

the place on the hard drive: 4Mb

Microsoft Windows XP, Windows Vista, Windows 7.

**2. Technical specification on the program**

2.1 Structure of the software product

The structure of the developed program model has an appearance according to listing.

```
close all; clear all; clc;
% ==========================================================
% % signal of modulation of %
% ==========================================================
C=3.0e8; %
RF=1.0e9
```

```
Lambda=C/RF
PulseNumber=10
BandWidth=2.0e6
TimeWidth=2.0e-6
PRT=1e-3
PRF=1/PRT
Fs=10.0e6
q_db=-13;
% of NoisePower=-13 of % (dB);
NoisePower=10*log10(20) - q_db
% ----------------------------------------------------------------------------------%
SampleNumber=fix(Fs*PRT)
TotalNumber=SampleNumber*PulseNumber
BlindNumber=fix(Fs*TimeWidth);
%=========================================================
        Purpose %
%=========================================================
TargetNumber=1;
 SigPower(1:TargetNumber)=[1]; % [1 1 1 1];
TargetDistance(1:TargetNumber)=[500]; %4000 10000 15000 22000]; [10000 15000
22000];
DelayNumber(1:TargetNumber)=fix (Fs*2*TargetDistance(1:TargetNumber) / C);
TargetVelocity(1:TargetNumber)=[25]; % 50 450 3 200[450 3 250];
TargetFd(1:TargetNumber) =2*TargetVelocity(1:TargetNumber)/Lambda
%=========================================================
    % useful signal
%=========================================================
number=fix(Fs*TimeWidth);
if rem (number, 2) ~ =0
    number=number+1;
end
for i=-fix(number/2): fix(number/2)-1
   Prost (i+fix(number/2)+1) =exp (1i * (pi * (BandWidth/TimeWidth) * (i/Fs)));
end
coeff=conj(fliplr(Prost)); %Flip matrix left to right; returns the complex
        %conjugate of the elements of Z
%----------------------------------------------------------------------------------%
SignalAll=zeros (1, TotalNumber);
for k=1:TargetNumber
SignalTemp=zeros (1, SampleNumber);
SignalTemp (DelayNumber(k) +1:DelayNumber (k)+number) =sqrt(SigPower(k))*Prost;
Signal=zeros (1, TotalNumber);
for i=1:PulseNumber
Signal ((i-1) *SampleNumber+1:i*SampleNumber) =SignalTemp;
    end
    FreqMove=exp (1i*2*pi*TargetFd (k) * (0:TotalNumber-1)/Fs);
    Signal=Signal. *FreqMove;
    SignalAll=SignalAll+Signal;
end
figure(2);
subplot(2,2,1); plot (real (SignalAll), 'r-'); title ('real (SignalAll)');
subplot(2,2,2); plot(imag(SignalAll)); title ('imag(SignalAll)');
```

```
subplot(2,2,3); plot(abs(SignalAll)); title ('abc(SignalAll)');
grid on; zoom on;
%=========================================================
        % noise
%=========================================================
%SystemNoise=normrnd (0,10^(NoisePower/10), 1, TotalNumber); %+1i*normrnd
(0,10^(NoisePower/10), 1, TotalNumber);
SystemNoise= (sqrt ((10^(NoisePower/10)))/sqrt(2)) * (rand (1, TotalNumber) +1i*rand
(1, TotalNumber));
%=========================================================
      % mixture a signal with noise
%=================================================================
=========================================%
Echo=SignalAll+SystemNoise; % +SeaClutter+TerraClutter;
for i=1:PulseNumber %
Echo % ((i-1) *SampleNumber+1: (i-1) *SampleNumber+number) =0;
end %
figure(3);
subplot(2,2,1); plot (real (Echo)); title ('real (Echo)');
subplot(2,2,2); plot(imag(Echo)); title ('imag(Echo)');
subplot(2,2,3); plot(abs(Echo)); title ('abc(Echo)');
%=========================================================
      % processing coordination
%=========================================================
% of h_mf=conj(Prost(end:-1:1));
pc_time0=filter % (h_mf, 1, Echo);
pc_time0=conv (Echo, coeff);
figure(4); plot (abs(pc_time0)); title ('abs(pc_time0)');
pc_time1=pc_time0(number:TotalNumber+number-1);
% ==========================================================
   % OF POF (FFT+IFFT)
% ==========================================================
Echo_fft=fft (Echo, 4096);
coeff_fft=fft (coeff, 4096);
pc_fft=Echo_fft. *coeff_fft;
pc_freq0=ifft(pc_fft);
figure(5); subplot(2,1,1); plot (abs(pc_freq0)); title ('abs(pc_freq0)');
hold on;
subplot(2,1,2); plot (abs (pc_time0(1:TotalNumber+number-1) -
pc_freq0(1:TotalNumber+number-1)), 'r'); title ('abs (pc_time0(1:TotalNumber+number-1) -
pc_freq0(1:TotalNumber+number-1))');
pc_freq1=pc_freq0(number:TotalNumber+number-1);
% ==========================================================
Processing SDTs %
=========================================================
for i=1:PulseNumber
        pc (i, 1:SampleNumber) =pc_freq1 ((i-1)
*SampleNumber+1:i*SampleNumber);
end
figure(6);
%plot (abs (pc (1,:)));
 mesh(abs(pc)); title ('abs(pc)');
```

```
% ================MTIË=================================%
for i=1:PulseNumber-1
    mti (i,:)=pc (:)-pc i+1 (i, :);
end
figure(7);
%plot (abs (mti (1,:)));
mesh(abs(mti)); title('MTI');
```

2.2 The applied software

For realization of the developed program model the Matlab R2010a programming environment is used.

2.3 Hardware requirements

For normal functioning of the program the following requirements to hardware – program part of a workplace of the user are imposed:

minimum:

Pentium II, RAM – 256 Mb, Video> 128 Mb

Display resolution: 800 x 600, 32 bit color

the place on the hard drive: 4Mb

Microsoft Windows XP

recommended:

Pentium IV, RAM – 1Gb, Video> 125 Mb

display resolution: 1024 x 768, 32 bit color

the place on the hard drive: 4Mb

Microsoft Windows XP, Windows Vista, Windows 7.

**3. Special conditions of application**

The program model is calculated is compatible to any versions an operating system of Microsoft Windows family.

**4. Conditions of transfer of program documentation or its sale**

Concerning acquisition and sale of the software product to contact the address:

214027, Smolensk, Kotovskogo St. 2 Military academy of army antiaircraft defense of Armed Forces of the Russian Federation of Marshall of the Soviet Union A.M. Vasilevsky (department of the organization of scientific work and preparation of the research and educational personnel);

phone:: (951) 698-64-67;

e-mail: silchenkov.ssv@mail.ru.

Group of authors

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Doctor of Engineering of ChIZhOV Anatoli Anatolivich;

Burbiya Abdelkhak.

## ADVERTISING AND TECHNICAL DESCRIPTION "Algorithm of Planning of Cargo Delivery by the Principles of JIT and JIS in a Microsystem"

*Federal public budgetary educational institution of the higher education "Siberian state automobile and road academy (SIBADI)"*

*CHMochalin S.M., Tyukina L.V.*

***UDC** 355.42*

***GRNTI** 78.19.03*

**1. Functional purpose of algorithm**

The algorithm of planning of cargo delivery by the principles "precisely in time" (JIT), "precisely in sequence" is intended (JIS) in a microsystem for definition of an opportunity or its lack of performance of conditions of the application on delivery of freight "precisely in time", "precisely in sequence". Action of algorithm is made on the basis of requirements imposed to freight delivery terms.

The algorithm allows to construct the operating plan of execution of operation for all participants of process of delivery of freight under the set delivery terms and restrictions, through streamlining of execution of tasks in time and effective use of necessary resources; to determine an opportunity (or its absence) cargo deliveries by the principle "precisely in time", "precisely in sequence"; to improve planning of activity of freight avtortansportny transportation in direct system of cargo delivery. A result of this algorithm is the made schedule separately for the consignor (GO), the consignee (GP), a cargo carrier (GPP) and the dispatcher.

**2. Algorithm scope**

The algorithm is applied at planned daily scheduling of the cargo motor transport working in a microsystem.

**3. System requirements**

The minimum system requirements for modeling: Microsoft Windows XP/Vista/7 operating system, Pentium IV Processor 1500 MHz, 2048 MB of random access memory, Hard drive 250 Gb, Display resolution 800 x 600, keyboard, mouse.

**4. Algorithm of planning of cargo delivery by the principles "precisely in time", "precisely in sequence" in a microsystem**

Effective management of transport system consists in effective management of all its resources and is actually reduced to long-term and short-term planning (in particular, to drawing up to the schedule) transportations [1]. Thus, there is a need of development of algorithm of planning of delivery of freight for simple system of cargo delivery. The algorithm of planning of cargo delivery by the principles "precisely in time", "precisely to sequence" in a microsystem is presented in fig. 1

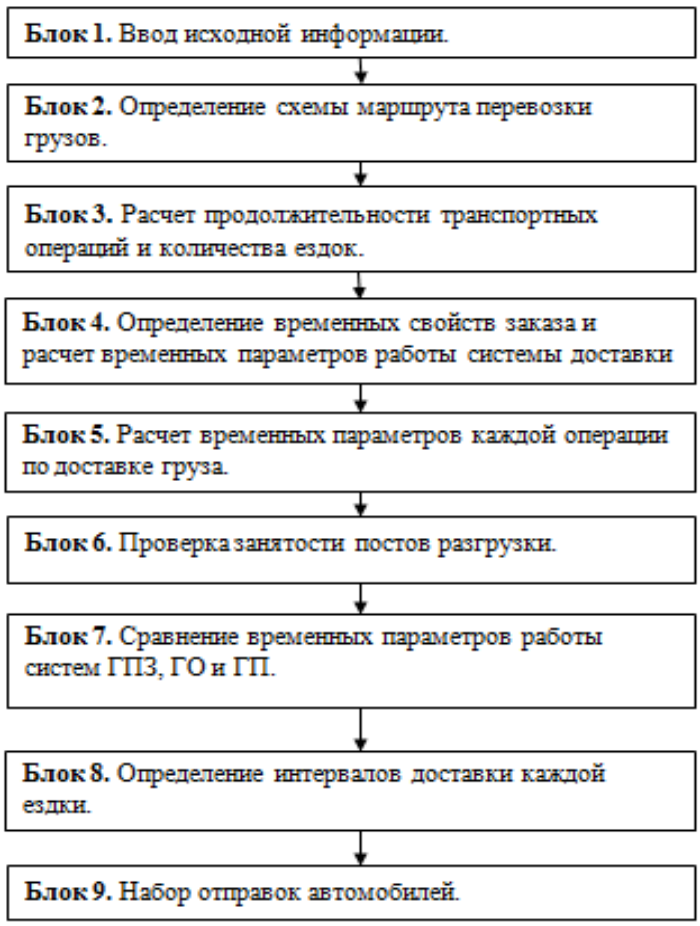


Figure 1 - Algorithm of planning of cargo delivery by the principles of JIT and JIS in a microsystem

This algorithm is focused on planning of delivery of freight "precisely in time" and in "a certain sequence" and considers all conditions and restrictions on work of all participants of system of delivery, on the application [2].

Block 1. Input of initial information. Basic data necessary for performance of calculations and admissible restrictions are entered.

Entrance data are the following indicators of work:

- information on a transportation route:

*lper* - distance of transportation of freight from the consignor (GO) to the consignee (GP), km.;

*lg*; *lx* – sizes of run of the car according to freight and without freight on a route, km.;

*ln1*; *ln2* – sizes of zero run respectively at an exit to the line and return to ATP, km;

*Vt* – the average technical speed of cars on a route, km/h;

*tp*; *tv* – performance time according to loading and discharging on a route, h;

Hp; Hv – quantity of posts according to loading and unloadings on a route;

The hardware – planned working hours of system within a day, h;

*Qzak* – the daily volume of the freight shown to transportation on a route for the planned period;

$\gamma$ – efficiency of loading capacity of a rolling stock on a route;

*q* – loading capacity of a rolling stock, t.;

$T^{ГО}_{н.р.}$ - time of the beginning of work of the consignor, h;

$T^{ГО}_{ок.р.}$ - time of completion of work of the consignor, h;

$T^{ГП}_{н.р.}$ - time of the beginning of work of the consignee, h;

$T_{ок.р.}^{ГП}$ - time of completion of work of the consignee, h;

- freight class;
- the number of cars on the line, Ae = 1 units;
- a type of sending – pomashinny sendings.

Block 2. Definition of the scheme of a route of transportation of goods. Is defined according to what scheme of a route (pendular, ring, radial) there will be a delivery of freight. Depending on the scheme of a route further calculations for drawing up the schedule will be made. Pendular scheme of a route:

- a pendular route with the return not loaded run on which according to need for transportations, it is necessary to have no more than one car;
- a pendular route with the return loaded run. In turn, can be:

a) a pendular route with loaded run in both directions;

b) a pendular route, with the return loaded run not at all distance of transportations;

c) a pendular route when the smaller quantity of freight is in the opposite direction transported.

Ring scheme of a route pomashinny sendings:

a) two-unit;

b) three-unit;

c) four-unit.

Radial scheme of a route:

a) simple;

b) combined;

c) difficult.

Block 3. Calculation of indicators of transport process and quantity goer. Calculation of duration of a loaded ezdka (tge), duration of single run (tx), time of an ezdka (te), turn-around time (to), quantity the goer (Ze), working hours of system of delivery (Trsd) is made.

1. calculation of duration of a loaded ezdka:

$$t_{ge} = \frac{l_{пер}}{V_m}, (1)$$

2. calculation of duration of single run:

$$t_x = \frac{l_{пер}}{V_m}, (2)$$

3. calculation of time of an ezdka:

$$t_e = \frac{2l_{пер}}{V_m} + t_{пв}, (3)$$

4. calculation of turn-around time:

$$t_o = \frac{2l_{пер}}{V_m} + t_{пв}, (4)$$

5. Calculation of quantity goer:

$$Z_e = \left[\frac{Q}{q\gamma}\right], (5)$$

6. Calculation of working hours of system of delivery:

$$T_{р.с.д.} = t_o \times Z_e \quad (6)$$

Block 4. Determination of temporary properties of the order and calculation of temporary parameters of work of system of delivery. The restrictions specified in the application for delivery of freight are introduced: the number of parties (Pn), quantity of the freight transported for one party (qp) to which time it is necessary to carry out delivery "precisely in time" (Ttv). On the basis of restrictions on delivery of freight and working hours of system of delivery the beginning of work of system of delivery is timed (Tsdn.R.), time of completion of work of system of delivery (Tsdok.R.). Time of the beginning of the first loading in the first party will be time of the beginning of work of system of delivery, time of completion of work of system of delivery corresponds to time of end of the last ezdka without freight.

Block 5. Calculation of temporary parameters of each operation on delivery of freight. In this block for each ezdka *n-oh* the party is timed the beginnings/ends of loading, time of the beginning/end of the movement with freight, time of the beginning/end of unloading, time of the beginning/end of single run.

Block 6. Check of employment of posts of unloading, loading. By creation of the schedule of transport operations on delivery of freight an inspection on employment of posts of unloading and loading by one transport operation is carried out. If by results of check comes to light that at the same time in point of loading/unloading it is necessary to make two and transport operations more of the same name, then correction of time of the designated accumulated transport operation is carried out.

Block 7. Comparison of temporary parameters of work cargo carrier (GPP), GO and GP. By creation of the schedule of compatibility of operating time of participants of process of delivery of freight. Comparison of temporary parameters of work of system of GPP and the GO system, temporary parameters of work of system of GPP and the GP system on observance of temporary restrictions on working hours of each system is carried out. At detection of incompatibility of working hours of systems possible correction of operating time of one of systems is carried out (GO, GP, GPP).

Block 8. Definition of intervals of delivery of each ezdka. This block provides definition of intervals of delivery between ezdka, uniformity of intervals of delivery between ezdka. The possibility of commission the goer is checked by one car.

Block 9. Set of sendings cars. In this block the schedule on delivery of freight taking into account the obtained data and the imposed restrictions on the application for delivery is formed.

For performance check delivery terms "precisely in time", "precisely in sequence" it is necessary to make creation of schedules of work of the car in system with the available restrictions. The schedule is under construction as follows: on abscissa axis in the increased scale duration of each transport operation of everyone of each party, delivery time "precisely term" are postponed. At first make creation of the schedule of delivery of freight according to concepts "precisely in time" and "precisely in sequence" in time frames of work of a carrier. Then build the schedule of temporary compatibility of work of participants of process of delivery of freight (the consignor, the consignee, a carrier).

At construction it is necessary to monitor employment of posts of loading/unloading and if it turns out so that the post of loading/unloading is occupied at the time of the beginning *n-oh* of loading/unloading, in graphics the razdvizhka on a waiting time of loading and unloading operations becomes. However at the same time freight delivery terms "precisely in time", "precisely in sequence" have to be satisfied.

**5. Conditions of transfer of algorithm**

Condition of transfer of this algorithm is the contract of purchase and sale signed between Federal public budgetary educational institution of the higher education "The Siberian state automobile and road academy (SIBADI)" and interested party.

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## ADVERTISING AND TECHNICAL DESCRIPTION "Model of formation and search of rational options distributions of resources of electromagnetic compatibility radio-electronic means of products of a special purpose"

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***GRNTI*** *14.35.07, 50.07.00*

**1. Functional purpose of the program, area of its application, its restriction**

1.1 Purpose of the program

The program model of adaptive management of a frequency and spatial resource of ensuring electromagnetic compatibility (EMS) of the means of a special purpose (MSP) is intended for performance of the automated optimization of parameters of radio-electronic means (RES) working in common at the set site of the district.

The model can be used for automated management of providing parameters EMS of RES, estimates in real time of an electromagnetic situation (EMO) when developing new SSN for the purpose of study of a question their EMS with the existing SSN.

1.2 Short description of work

The problem EMS of RES of SSN group consists in need of effective distribution of resources of providing EMS: spatial, frequency and temporary.

The time resource of providing EMS is realized by development and performance of a complex of actions, for example:

- definition of an order of temporary distribution of work of RES;
- joint planning of actions of SSN in the preset area;
- imposing of bans on inclusion of a high voltage of the transferring RES systems.

The offered technique which cornerstone the real model is means use for providing EMS a spatial and frequency resource.

EMS in SSN group is understood a rating on the frequency of the transferring systems of the involved SSN as a frequency resource of providing.

We will understand RES rating on districts, and also the choice of the directions of directional patterns of antennas as a spatial resource.

Providing process EMS of SSN group with use of a spatial and frequency resource can be presented in the form of the solution of an optimizing task. At the same time the purpose of a task is findings of a minimum of function (1)

$Yi\ Kf(;\ K\alpha; \text{To Kh})$, (1)

here $i$ loss of radar information in a consequence of impact on intakes of an inadvertent hindrance;

f frequency coefficient the characterizing level of an inadvertent hindrance depending on a rating of frequencies of the transferring RES

systems;

α slope the characterizing level of an inadvertent hindrance depending on the BOTTOM mutual direction of the RES send-receive antennas;

o Kh territorial coefficient the characterizing level of an inadvertent hindrance depending on mutual removal of RES.

We will understand the relation of a useful signal from the purpose on distant border of a zone of detection to the level of an inadvertent hindrance as loss of radar information. Yobshch. Is defined by a formula (2)

$$Yobshch = Yi\sum,$$

$$Yi = P\frac{makh-Rchavstv.PRS}{Rmakh-Rnrp}, (2)$$

here Rmakh maximum level of a signal on an entrance of the RES reception system;

R feelings. PRS sensitivity of the RES reception system;

R nrp level of the inadvertent hindrance created by the next RES on an entrance of the RES reception system.

Rmakh is defined by expression 3

Rmakh = P feelings. PRS × Dд, (3)

where Dd – the dynamic range of the RES reception system.

Rchuvstvo and Dd are technical characteristics of concrete RES and for calculations undertake from technical documentation on RES (the technical specification, the form, etc.)

Determination of level of the general loss of radar information is shown in figure 1.

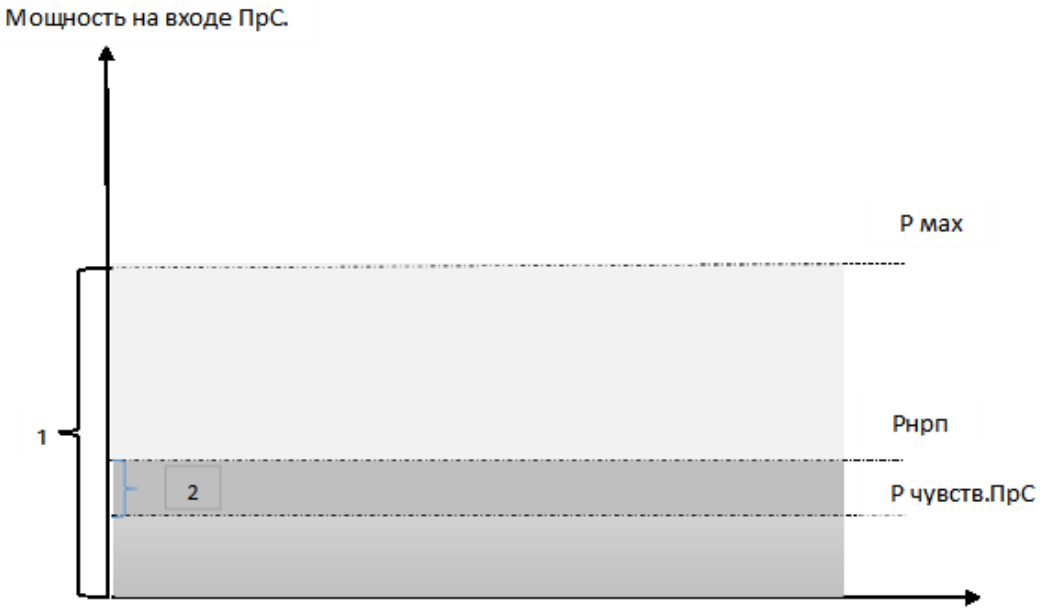



Figure 1 – Range of power levels:

1 – processed by the RES reception system;

2 – which processing is not possible because of influence of NRP

The analysis of figure 1 shows that loss of radar information is understood as the relation of the range of levels of capacities processed by the RES reception system to the range of levels of capacities processing of which is not possible because of influence of the inadvertent radio of a hindrance (IRH).

Power of NRP influencing the RES reception system from the next RES is determined by a formula (4).

$$Rnrp = \frac{Kres \times Kf \times k\alpha D2}{} (4)$$

distance between RES;

her
e

the coefficient characterizing technical parameters of compatibility of res RES.

Kres pays off on a formula (5)

$$Kres = \frac{P1 \times G1 \times S24\pi}{} \quad (5)$$

where
- P1 – NRP source signal power at the exit of the transferring system;
- G1 – coefficient of strengthening of the antenna of a source of NRP;
- S2 – effective area of the antenna of the NRP receiver;
- Kres – pays off for each RES of SSN group, at the same time each RES is considered both as a source of a hindrance and as the receiver.

Results of calculation of Kres are entered in table 1.

*Table 1*

Results of calculation of Kres (example)

| | RES 1 | RES 2 | RES 3 | RES 4 |
|---|---|---|---|---|
| RES 1 | | 21222611 | 20537580 | 30807325 |
| RES 2 | 159158,8 | | 795831,2 | 1193784 |
| RES 3 | 21563455 | 111111111111 | | 162000000 |
| RES 4 | 1540247 | 7958479 | 7701592 | |

The frequency coefficient $of\ Kf$ the characterizing level of an inadvertent hindrance depending on a rating of frequencies of the transferring RES systems pays off according to GOST.

On the basis of calculation $of\ Kf$ the table of frequency influence of RES of SSN group (table 2) is formed.

*Table 2*

Example of frequency influence of RES group

| | RES 1.1 | RES 1.2 | RES 2.1 | RES 2.2 | RES 3.1 | RES 3.2 | RES 4.1 | RES 4.2 |
|---|---|---|---|---|---|---|---|---|
| RES 1.1 | | | 0,01 | 0,01 | 0,001 | 0,001 | 0,001 | 0,001 |
| RES 1.2 | | | 0,02 | 0,02 | 0,002 | 0,002 | 0,002 | 0,002 |
| RES 2.1 | 0,01 | 0,02 | | | 0,3 | 0,3 | 0,7 | 0,7 |
| RES 2.2 | 0,01 | 0,02 | | | 0,7 | 0,7 | 1 | 1 |
| RES 3.1 | 0,001 | 0,002 | 0,3 | 0,7 | | | 0,7 | 0,7 |
| RES 3.2 | 0,001 | 0,002 | 0,3 | 0,7 | | | 0,5 | 0,5 |
| RES 4.1 | 0,001 | 0,002 | 0,7 | 1 | 0,7 | 0,5 | | |
| RES 4.2 | 0,001 | 0,002 | 0,7 | 1 | 0,7 | 0,5 | | |

RES of group with all letters are brought in the left column and the top line of the table of frequency influence all.

The number of warranty frequencies and mutual frequency influence is taken conditionally.

Kα slope the characterizing level of an inadvertent hindrance depending on the BOTTOM mutual direction of the RES send-receive antennas pays off on a formula 6

$$К\alpha = 1 \begin{cases} \qquad\qquad\qquad\qquad , if \ \square\square\square 2- \\ (\pi \times \alpha\Theta)^{-\frac{(fb2)}{2\times ln(23\pi)-}} , if \ \square > \square 2- \end{cases} \quad (6)$$

here corner between the direction of the directional pattern of the antenna and on the NRP receiver;

width of the main petal of the directional pattern of the antenna;

level of the first lateral petal in relation to the main thing.

*b*

Often there is a situation in which use of the listed above providing resources EMS is at the same time inexpedient or it is not possible. Proceeding from it, the offered model consists of four modules.

The first module – the module of input of basic data which treat:

structure of SSN group for working off of the current situation;

current parameters of each RES;

coefficients of the importance of each RES;

threshold value of the general loss of information in the conditions of influence of NRP.

Threshold value of the general loss of information in the conditions of influence of NRP is defined as follows:

the criterion of quality of functioning of each RES is defined;

proceeding from criteria of quality of functioning of RES the admissible level of influence of NRP is defined;

admissible loss of information of SSN group is defined with their coefficient of the importance.

Criterion of quality of functioning of RES, in this case not excess of power of NRP of level of sensitivity of the RES reception system or power of a signal from the purpose of the detection zone which is on distant border can be.

Admissible (threshold value) loss of information of SSN group is determined by a formula 7

$Y\ of\ a\ time. = \sum Y\ i\ of\ a\ time. \times$ Кзн$i$, (7)

where *Y i* of a time – threshold value of loss of information *i-tym RES*;

Kzni – coefficient of the importance *of i-that* RES.

*Y i* of a time pays off on a formula 8.

$Yi = \frac{P\ move\ Roth\ of\ the\ purpose}{Rmakh - Rnrp}$, (8)

where Rmakh – maximum level of a signal on an entrance of the RES reception system;

Purpose mouth – power of a signal from the purpose of the detection zone which is on distant border;

R nrp – level of an inadvertent hindrance.

R calculates from the purpose on a basic formula of a radar-location.

For further calculations for a basic formula of a radar-location technical characteristics of radars and help data of the effective area dispersion of standard air objects undertake.

The problem of the second module of model consists in definition of optimum distribution of warranty frequencies between RES at which loss of information in the conditions of influence of NRP is minimum.

At the second stage the frequency resource for providing EMS is used.

Distribution of warranty frequencies is made by method of genetic algorithm. Individuals of initial population are formed of warranty frequencies of RES of SSN group. At the same time chromosomes of individuals look as follows:

*Fires1*; *Fires2*; *Fires3*; *Fires4*,

where *Fires1* – the warranty frequency of the 1st RES chosen in a random way from the available warranty frequencies;

*Fires2* – the warranty frequency of the 2nd RES chosen in a random way from the available warranty frequencies;

*Fires3* – the warranty frequency of the 3rd RES chosen in a random way from the available warranty frequencies;

*Fires4* – the warranty frequency of the 4th RES chosen in a random way from the available warranty frequencies.

Thus we form 20 individuals. We determine fitness of each individual by a formula (2). We choose couple of chromosomes of parents by means of search. Let's see off a krossingover of two parents, making two descendants. We carry out a posterity mutation. Further we will see off a krossingover and a mutation until the new generation of the population consisting of 20 individuals is created. We define fitness of each individual. We repeat actions until the global minimum of function of fitness is found. We will consider achievement of a global minimum of function of fitness as criterion of a stop.

Genes of a chromosome of an individual on which there was a stop of genetic algorithm are used for calculation of value of the general loss of information on a formula (2). The received value is compared to threshold value. In case the inequality (9) is carried out optimization of the RES parameters stops.

Ypor. > Yobshch. (9)

The received set of warranty frequencies is distributed on RES. If the inequality (9) is not carried out, it is necessary to pass to the third module of model or to change structure of SSN group if transition to the third stage is not possible for the technical or tactical reasons.

Problem of the third module of model – to define optimum distribution of the directions of the directional pattern of the antenna (DPA) of RES of SSN group at which loss of information in the conditions of influence of NRP is minimum. The distribution of warranty frequencies received at the second stage undertakes as basic data for calculations. At the third stage the spatial resource for providing EMS is used.

Distribution of the RES BOTTOMS directions is made by method of genetic algorithm. Individuals of initial population are formed of possible limits of change of the RES BOTTOM direction of group. At the same time chromosomes of individuals look as follows:

α ires1; α ires2; α ires3; α ires4,

where α ires1 – the BOTTOM direction of the 1st RES chosen in a random way from a possible limit of change of the direction;

α ires2 – the BOTTOM direction of the 1st RES chosen in a random way from a possible limit of change of the direction;

α ires3 – the BOTTOM direction of the 1st RES chosen in a random way from a possible limit of change of the direction;

α ires4 – the BOTTOM direction of the 1st RES chosen in a random way from a possible limit of change of the direction.

Further the genetic algorithm described at the second stage is carried out. Genes of a chromosome of an individual on which there was a stop of genetic algorithm are used for calculation of value of the general loss of information on a formula (2). The received value is

compared to threshold value.
In case the inequality (9) is carried out optimization of the RES parameters stops.

The received set of the RES BOTTOMS directions is distributed on RES. If the inequality 9 is not carried out it is necessary to pass to the fourth stage of a technique or to change structure of SSN group if transition to the fourth stage is not possible for the technical or tactical reasons.

At the fourth stage the spatial resource for providing EMS is used. The problem of the fourth stage – to define optimum distribution of RES in space at which is minimum loss of information in the conditions of influence of NRP. The distribution of frequencies and a set of the RES BOTTOMS directions received at the second and third stage undertake as basic data for calculations.

The territorial razneseniye of RES is made by method of genetic algorithm. Individuals of initial population are formed of the main and spare positions of RES of group. At the same time chromosomes of individuals look as follows:

HU ires1; HU ires2; HU ires3; HU ires4,

where HU ires1 – coordinates 1 oh RES chosen in a random way from possible positions;

HU ires2 – coordinates 2 oh RES chosen in a random way from possible positions;

HU ires3 – coordinates 3 oh RES chosen in a random way from possible positions.

HU ires4 – coordinates 4 oh RES chosen in a random way from possible positions;

Further the genetic algorithm described at the second stage is carried out. Genes of a chromosome of an individual on which there was a stop of genetic algorithm are used for calculation of value of the general loss of information on a formula 2. The received value is compared to threshold value.
In case the inequality is carried out the 9th optimization of the RES parameters stops.

The received territorial distribution of RES is distributed on RES. If the inequality 9 is not carried out it is necessary to change structure of SSN group.

Structure of the software:

– panel of input of basic data;
– database of technical characteristics of RES;
– the control panel of operating modes ON;
– mathematical apparatus of function evaluation of fitness;
– mathematical apparatus of carrying out genetic algorithm;
– mathematical apparatus of calculation of coefficients of the importance;
– panel of display of results of calculations.

The structure of the software is shown in figure 2

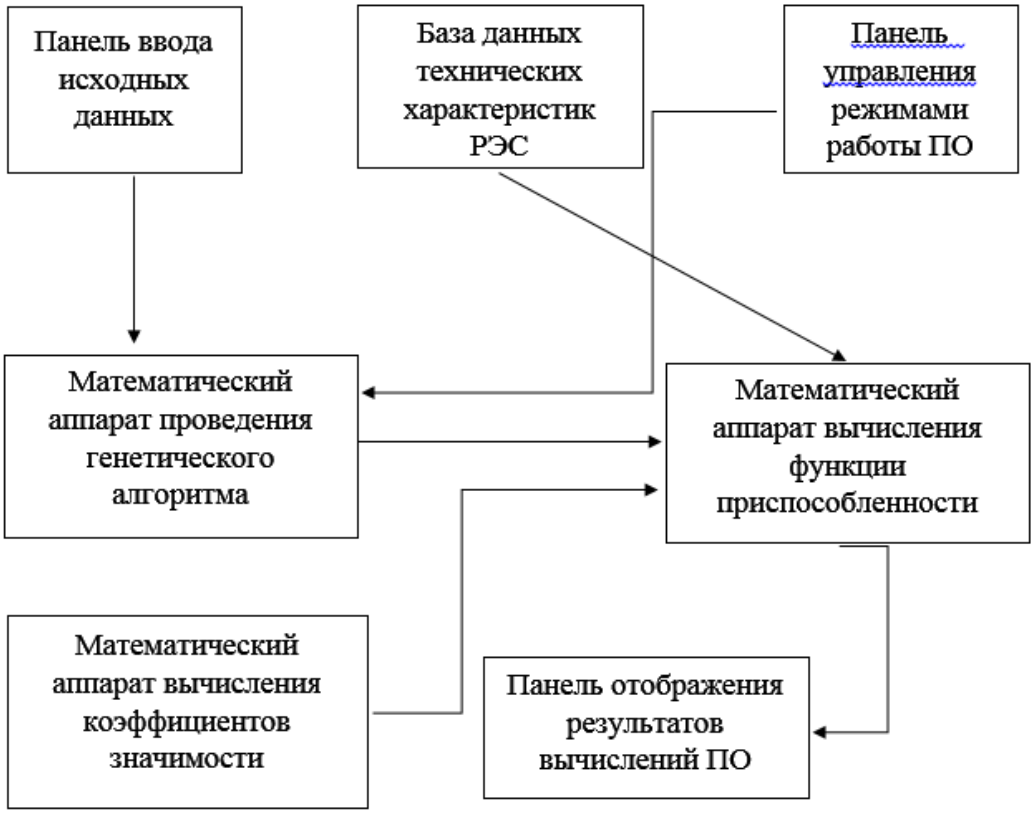



Figure 2 – Structure of the software

Panel of input of basic data. The panel of input of basic data is intended for input in ON:

– RES frequencies;

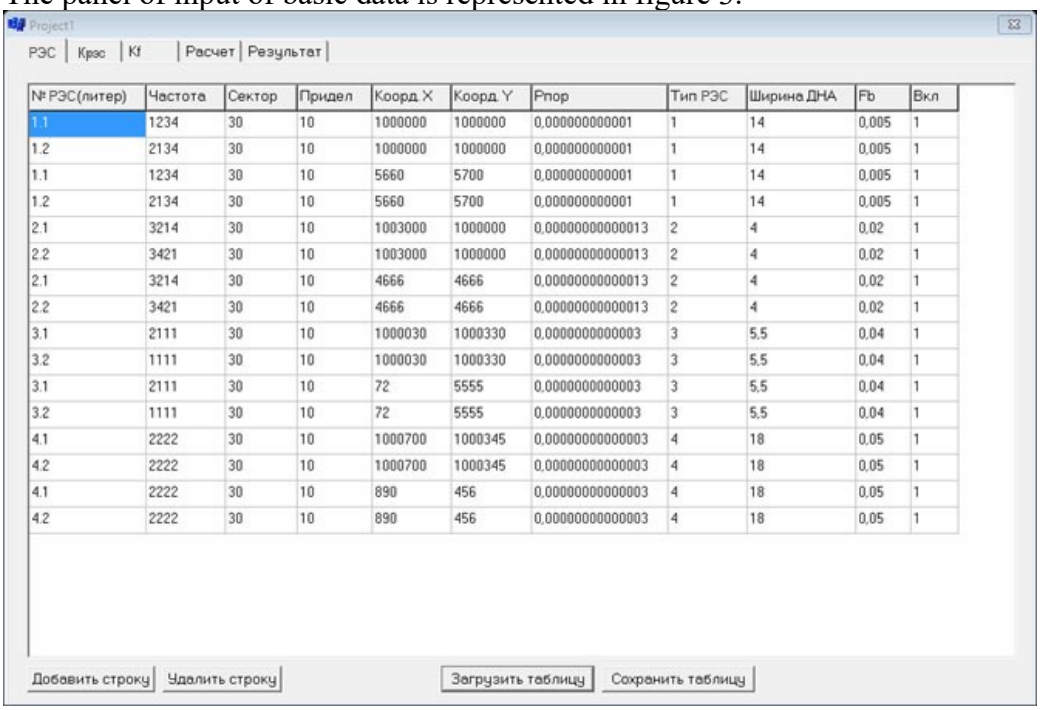
– coordinates of positions (first and second type) of RES;

– RES BOTTOMS directions and limit of their changes;

– admissible power of influence of NPR;

– some technical characteristics of RES.

The panel of input of basic data is represented in figure 3.



Project1

РЭС | Крэс | Kf | Расчет | Результат

| № РЭС(литер) | Частота | Сектор | Придел | Коорд. X | Коорд. Y | Рпор | Тип РЭС | Ширина ДНА | Fb | Вкл |
|---|---|---|---|---|---|---|---|---|---|---|
| 1.1 | 1234 | 30 | 10 | 1000000 | 1000000 | 0,000000000001 | 1 | 14 | 0,005 | 1 |
| 1.2 | 2134 | 30 | 10 | 1000000 | 1000000 | 0,000000000001 | 1 | 14 | 0,005 | 1 |
| 1.1 | 1234 | 30 | 10 | 5660 | 5700 | 0,000000000001 | 1 | 14 | 0,005 | 1 |
| 1.2 | 2134 | 30 | 10 | 5660 | 5700 | 0,000000000001 | 1 | 14 | 0,005 | 1 |
| 2.1 | 3214 | 30 | 10 | 1003000 | 1000000 | 0,00000000000013 | 2 | 4 | 0,02 | 1 |
| 2.2 | 3421 | 30 | 10 | 1003000 | 1000000 | 0,00000000000013 | 2 | 4 | 0,02 | 1 |
| 2.1 | 3214 | 30 | 10 | 4666 | 4666 | 0,00000000000013 | 2 | 4 | 0,02 | 1 |
| 2.2 | 3421 | 30 | 10 | 4666 | 4666 | 0,00000000000013 | 2 | 4 | 0,02 | 1 |
| 3.1 | 2111 | 30 | 10 | 1000030 | 1000330 | 0,0000000000003 | 3 | 5,5 | 0,04 | 1 |
| 3.2 | 1111 | 30 | 10 | 1000030 | 1000330 | 0,0000000000003 | 3 | 5,5 | 0,04 | 1 |
| 3.1 | 2111 | 30 | 10 | 72 | 5555 | 0,0000000000003 | 3 | 5,5 | 0,04 | 1 |
| 3.2 | 1111 | 30 | 10 | 72 | 5555 | 0,0000000000003 | 3 | 5,5 | 0,04 | 1 |
| 4.1 | 2222 | 30 | 10 | 1000700 | 1000345 | 0,00000000000003 | 4 | 18 | 0,05 | 1 |
| 4.2 | 2222 | 30 | 10 | 1000700 | 1000345 | 0,00000000000003 | 4 | 18 | 0,05 | 1 |
| 4.1 | 2222 | 30 | 10 | 890 | 456 | 0,00000000000003 | 4 | 18 | 0,05 | 1 |
| 4.2 | 2222 | 30 | 10 | 890 | 456 | 0,00000000000003 | 4 | 18 | 0,05 | 1 |

Добавить строку | Удалить строку | Загрузить таблицу | Сохранить таблицу

Figure 3 – Panel of input of basic data.

The panel of input of basic data represents the RES tab in the software. The panel is executed in the form of the table into columns of which basic data are entered.

The panel has the following columns:

1. "No. RES (letters)". In this column number RES and its warranty frequencies in following the H.U format where to X – serial number of RES, At – serial number of warranty frequency of RES are entered. If RES has several warranty frequencies, then it is necessary to enter each warranty frequency from a new line.

2. "Frequency". In this column warranty frequency is entered. Warranty frequency needs to be entered as an integer in hertz.

3. "Sector". The RES BOTTOM direction is specified in this column. The RES BOTTOM direction needs to be specified by an integer in degrees.

4. "Limit". The limit of change of the RES BOTTOM direction is specified in this column. The limit of change of the RES BOTTOM direction needs to be specified by an integer in degrees.

5. "Coordinate of X". Width of location of RES is specified in this column. Coordinates need to be entered starting with the younger category of rectangular system of coordinates.

6. "Coordinate At". Longitude of location of RES is specified in this column. Coordinates need to be entered starting with the younger category of rectangular system of coordinates.

7. "Rpor". Admissible power of the influencing NPR is specified in this column. Power needs to be specified in watts.

8. "RES type" In this column needs to be specified serial number of RES in hierarchy of types of systems.

9. "BOTTOM width". It is necessary to specify RES BOTTOM width on an azimuth in this column. The whole or fractional number in degrees is specified in a column.

10. "Fb". It is necessary to specify the level of the first lateral petal in relation to the main thing in this column.

11. "In C". In this RES column joins in structure of SSN group. To include RES in structure of group it is necessary to specify in a column 1 to expel RES from group it is necessary to enter 0. Also in this column it is possible to impose a ban on use of warranty frequency or work on a launching site. It is necessary for correct work of the software that at least one RES was included in structure of group.

Before data input it is necessary to generate necessary quantity of lines by means of the Add a Line button. If necessary it is possible to remove any line, having put on it a marker and having pressed the Remove a Line button.

For convenience of use of the software the panel of input of basic data has the Keep the Table buttons "To load the table".

The Keep the Table button allows to make preservation of basic data in the file of the .txt format. Kept earlier given to load perhaps into the software the Load the Table button.

The database of technical characteristics of RES is intended for input and storage:

– frequency coefficient of Kf characterizing the level of an inadvertent hindrance depending on a rating of warranty frequencies of the transferring RES systems;

– coefficient of Kres of RES characterizing technical parameters of compatibility.

Proceeding from appointment and the number of the entered data the database of technical RES was developed. The database of technical characteristics of RES represents the Kf and Kres tabs in the software.

| \ | 1.1 | 1.2 | 2.1 | 2.2 | 3.1 | 3.2 | 4.1 | 4.2 |
|---|---|---|---|---|---|---|---|---|
| 1.1 | * | * | 0,01 | 0,01 | 0,001 | 0,001 | 0,001 | 0,001 |
| 1.2 | * | * | 0,02 | 0,02 | 0,002 | 0,002 | 0,002 | 0,002 |
| 2.1 | 0,01 | 0,02 | * | * | 0,3 | 0,3 | 0,7 | 0,7 |
| 2.2 | 0,01 | 0,02 | * | * | 0,7 | 0,7 | 1 | 1 |
| 3.1 | 0,001 | 0,002 | 0,3 | 0,7 | * | * | 0,7 | 0,7 |
| 3.2 | 0,001 | 0,002 | 0,3 | 0,7 | * | * | 0,5 | 0,5 |
| 4.1 | 0,001 | 0,002 | 0,7 | 1 | 0,7 | 0,5 | * | * |
| 4.2 | 0,001 | 0,002 | 0,7 | 1 | 0,7 | 0,5 | * | * |

Добавить строку+столбец | Удалить строку+столбец | Загрузить таблицу | Сохранить таблицу

Figure 4 – Software Kf Tab

When filling the table it is necessary that serial numbers and numbers of warranty frequencies across and verticals coincided. Before filling of the table it is necessary to generate necessary quantity of lines and columns by means of the Add a Line + a Column button. If necessary it is possible to remove excess lines and columns with the Remove a Line + a Column button. For convenience of use of the software the Kf tab has the Keep the Table and Load the Table buttons.

The Keep the Table button allows to make saving data of Kf in the file of the .txt format. Kept earlier given to load perhaps into the software the Load the Table button.

The Kres tab is represented in figure 5.

When filling the table it is necessary that serial numbers and numbers of warranty frequencies across and verticals coincided. Before filling of the table it is necessary to generate necessary quantity of lines and columns by means of the Add a Line + a Column button. If necessary it is possible to remove excess lines and columns with the Remove a Line + a Column button. For convenience of use of the software the Kres tab has the Keep the Table buttons "To load the table".

The Keep the Table button allows to make saving data Kres in the file of the .txt format. Kept earlier given to load perhaps into the software the Load the Table button.

| \ | 1.1 | 1.2 | 2.1 | 2.2 | 3.1 | 3.2 | 4.1 | 4.2 |
|---|---|---|---|---|---|---|---|---|
| 1.1 | * | * | 21222611 | 21222611 | 20537580 | 20537580 | 30807325 | 30807325 |
| 1.2 | * | * | 21222611 | 21222611 | 20537580 | 20537580 | 30807325 | 30807325 |
| 2.1 | 159158,8 | 159158,8 | * | * | 795831,2 | 795831,2 | 1193784 | 1193784 |
| 2.2 | 159158,8 | 159158,8 | * | * | 795831,2 | 795831,2 | 1193784 | 1193784 |
| 3.1 | 21563455 | 21563455 | 11111111111 | 11111111111 | * | * | 16200000000 | 16200000000 |
| 3.2 | 21563455 | 21563455 | 11111111111 | 11111111111 | * | * | 16200000000 | 16200000000 |
| 4.1 | 1540247 | 1540247 | 7958479 | 7958479 | 7701592 | 7701592 | * | * |
| 4.2 | 1540247 | 1540247 | 7958479 | 7958479 | 7701592 | 7701592 | * | * |

Добавить строку+столбец | Удалить строку+столбец | Загрузить таблицу | Сохранить таблицу

Figure 5 – Kres Tab

The control panel of operating modes ON.

The panel is intended for input of threshold value of the general loss of information, the choice of stages of optimization of the RES parameters and graphic display of results. The panel is represented in figure 6.

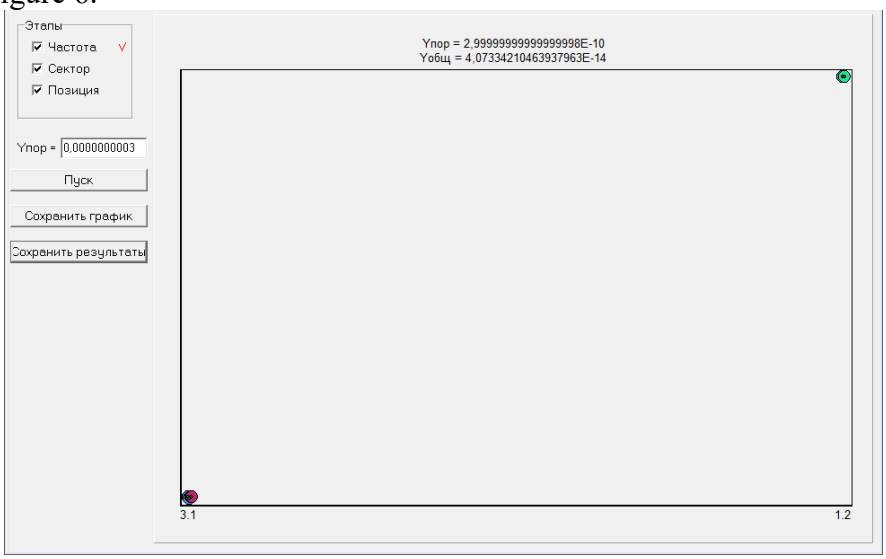



Figure 6 – The control panel of operating modes ON

On the control panel of operating modes ON the working field "Stages" is located. The working field "Stages" turns on 3 buttons "Frequency", "Sector", "Position" and three similar identifiers.

The Frequency button includes algorithm of optimum distribution of warranty frequencies between RES at which loss of information in the conditions of influence of NRP is minimum.

The Sector button includes algorithm of optimum distribution of the RES BOTTOMS directions of group at which loss of information in the conditions of influence of NRP is minimum.

The Position button includes algorithm of optimum distribution of RES on their launching sites at which loss of information in the conditions of influence of NRP is minimum.

On the working field "Stages" it is possible to establish an order of optimization of the RES parameters. Identifiers show at what stage of optimization it was succeeded to achieve desirable result.

The Y of a time. window is intended for input of threshold value of the general loss of information from influence of NRP.

The Start-up button starts work of the software.

The window of display of results is intended for graphic display of the received results of optimization of the RES parameters. In a window the received value of the general loss of information, and also distribution of RES on their positions is displayed. For convenience of use of the software the control panel of operating modes ON" has the Keep the Schedule and Keep Results buttons.

Panel of display of results of calculations.

The panel is intended for display of the received values of the RES parameters. The panel is represented in figure 7.

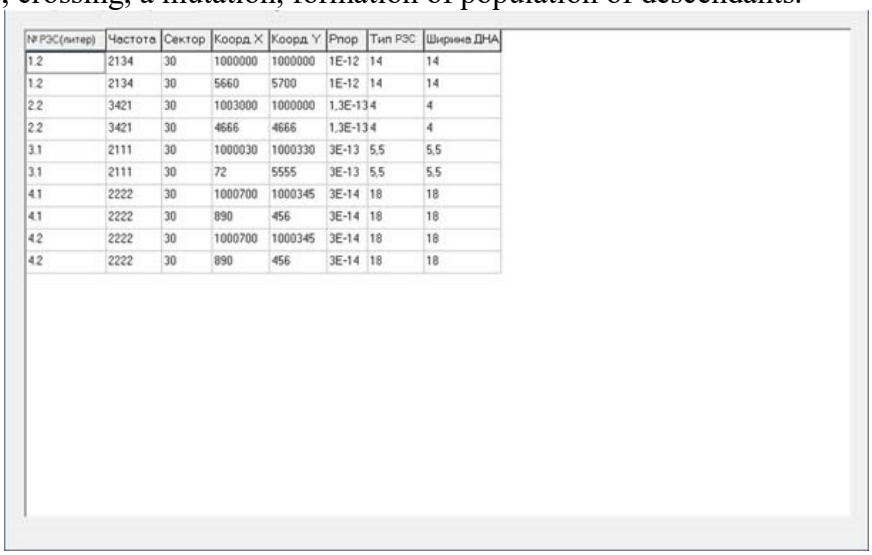
The panel has the same lines and columns as the panel of input of basic data, with that difference that the optimized RES parameters are brought to panels of display of the received results in the corresponding lines.

Mathematical apparatus of function evaluation of fitness.

The mathematical apparatus of function evaluation of fitness represents a set of formulas on which definition of the general loss of information in the conditions of influence of NRP is carried out.

Mathematical apparatus of carrying out genetic algorithm.

The mathematical apparatus of carrying out genetic algorithm is intended for carrying out standard operations of genetic algorithm such as formation of initial population, the choice of parents, crossing, a mutation, formation of population of descendants.



| № РЭС(литер) | Частота | Сектор | Коорд X | Коорд Y | Рпор | Тип РЭС | Ширина ДНА |
|---|---|---|---|---|---|---|---|
| 1.2 | 2134 | 30 | 1000000 | 1000000 | 1E-12 | 14 | 14 |
| 1.2 | 2134 | 30 | 5660 | 5700 | 1E-12 | 14 | 14 |
| 2.2 | 3421 | 30 | 1003000 | 1000000 | 1,3E-13 | 4 | 4 |
| 2.2 | 3421 | 30 | 4666 | 4666 | 1,3E-13 | 4 | 4 |
| 3.1 | 2111 | 30 | 1000030 | 1000330 | 3E-13 | 5,5 | 5,5 |
| 3.1 | 2111 | 30 | 72 | 5555 | 3E-13 | 5,5 | 5,5 |
| 4.1 | 2222 | 30 | 1000700 | 1000345 | 3E-14 | 18 | 18 |
| 4.1 | 2222 | 30 | 890 | 456 | 3E-14 | 18 | 18 |
| 4.2 | 2222 | 30 | 1000700 | 1000345 | 3E-14 | 18 | 18 |
| 4.2 | 2222 | 30 | 890 | 456 | 3E-14 | 18 | 18 |

Figure 7 – the panel of display of the received results.

1.3 Program scope

Scope – the software of automatic control of resources of electromagnetic compatibility of the radio-electronic systems entering into group of means of a special purpose, optimization of the RES parameters for the purpose of decrease in influence of NRP, an assessment of electromagnetic compatibility of the group of means of a special purpose consisting of the RES various types.

1.4 Restrictions of use of the program

This program is designed for the user with the higher technical education having experience with the software for automatic control of resources of electromagnetic compatibility.

**2. Technical specification on the program**

2.1 Structure of the software product

The flowchart of the software is represented in figure 8.

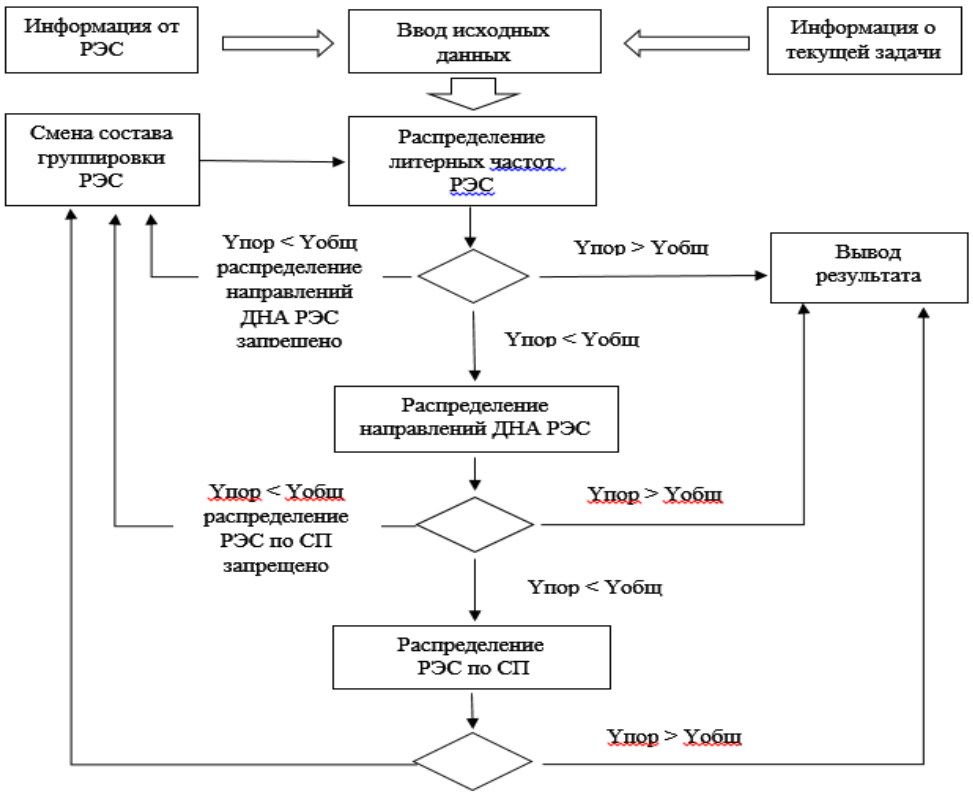


Figure 8 – the flowchart of work of the software

2.2 The applied software

Program realization of a way of monitoring and clearing of distortions of information on results of actions of failures does not require the special software.

2.3 Hardware requirements

For normal functioning of the program the following requirements to hardware-software part of a workplace of the user are imposed:

minimum requirements:

– the Intel or AMD processor with a frequency not lower than 2 GHz;
– random access memory with a capacity not less than 1024 Mb;
– the integrated video adapter;
– an empty seat on the system section of the hard drive 30 Mb;
– operating system of Microsoft Windows XP;

the recommended requirements:

– the Intel or AMD Dual Core processor with a frequency of 3 GHz;
– random access memory with a capacity of 2048 Mb;
– the integrated video adapter;
– an empty seat on the system section of the hard drive 200 Mb;
– Windows 7 operating system.

**3. Special conditions of application**

The type of an operating system does not influence operability of the program.

**4. Conditions of transfer of program documentation or its sale**

Concerning acquisition and sale of program realization of a way to contact the address:

214027, Smolensk, Kotovskogo St. 2 Military academy of army antiaircraft defense of Armed Forces of the Russian Federation of Marshall of the Soviet Union A.M. Vasilevsky (department of the organization of scientific work and preparation of the research and educational personnel);

phone: (960) 580-44-71;

e-mail: smolrsu@mail.ru

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Losenkov Alexander Anatolyevich;

Trofimenkov Vitaly Vladimirovich.

# ELECTRONIC RESOURCES OF SUPPORT OF EDUCATIONAL PROCESS (HIGHER EDUCATION)

## ADVERTISING AND TECHNICAL DESCRIPTION "An electronic educational and methodical complex on discipline "Crisis management"

*Federal public budgetary educational institution of the higher education "Nizhny Novgorod state pedagogical university of Kozma Minin (Mininsky university)"*

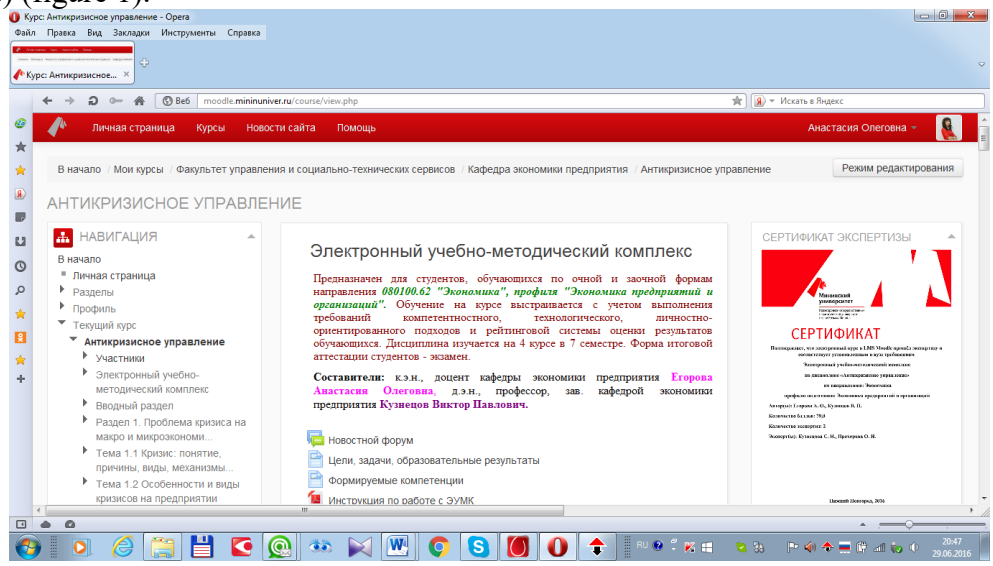
*Egorova A.O. , Kuznecov V.P.*

***UDC** 378*

***GRNTI** 06.01.11, 06.03.07, 06.35.35, 06.52.17, 06.71.03*

**1. Functional purpose of a product, scope, its restrictions**

The electronic educational and methodical complex (further - EUMK) on discipline "Crisis management" is intended for FGBOOU WAUGH'S students of the "NGPU of K. Minin" which are trained in the direction of training of bachelors 080100.62 (38.03.01) - Economy, to a preparation profile "Business economics and the organizations" (on internal and extramural studies) (figure 1).




Drawing the 1-Main web page of an electronic educational and methodical complex on discipline "Crisis management"

The lecture and practical material offered in EUMK is based on the modern representations relating to tendencies and prospects of cyclic development of social and economic systems at the present stage. The scientific results received by authors in recent years of researches are used.

Relevance of development of this EUMK and its novelty is defined by lack of the similar electronic educational and methodical development adapted under requirements of the Federal state educational standard of the higher education and feature of educational process at the Nizhny Novgorod state pedagogical university of Kozma Minin.

EUMK on discipline "Crisis management" includes the following structural parts:

1. The program and methodical part of EUMK includes the description of a resource, purpose, task and educational results of training, the formed competences, the instruction for work with EUMK, working programs for internal and correspondence forms of education, individual a rating plans of students, methodical recommendations about performance of independent works, the magazine of attendance and progress of students (figure 1).

2. The thematic contents is submitted on each subject of a course and includes lecture and practical materials. Lecture materials are followed by test tasks in lecture (they allow the student

to control development of each part of lecture and to consider passing of lecture in a total assessment of development of a course). Tasks for practical and independent work contain the complete didactic description: the name of work, the work purpose, the formed competences, the instruction and a technique of performance of work, an assessment, a work representation format: text, scan copy of written work, Word file.

3. Materials for final assessment of students contain questions to examination in discipline, criteria and indicators of an assessment of the answer of the student at examination, the intra semestrial and final test on discipline, subjects of papers, standard practical tasks.

4. Directory materials on discipline contain the glossary on discipline, the list of the main and additional literature, hyperlink on full text versions of textbooks/manuals from the list of references.

*Scope:*

EUMK on discipline "Crisis management" is intended for preparation, the organization and carrying out classroom and independent occupations of Moodle which are trained in the conditions of system of electronic training, and also for independent development of this discipline.

Training at a course is built taking into account implementation of requirements competence-based, technological, personal focused approaches and rating system of an assessment of the results which are trained.

EUMK on discipline "Crisis management" is realized in the electronic educational environment of Mininsky university – Moodle on the website http://moodle.mininuniver.ru. As practice shows, application of a complex allows to increase security of students with educational and methodical materials, convenience of their use and updating, quality of development of discipline, efficiency of development in students of the competences provided by educational standards.

*Development restrictions:* no.

**2. The used technical means**

The electronic educational and methodical complex on discipline "Crisis management" is presented and is realized in the electronic educational environment of Mininsky university - Moodle on the website http://moodle.mininuniver.ru. Any personal computers having Internet connection are necessary for work with a complex. When carrying out classroom occupations the interactive board with Internet connection can be also used. Besides preliminary registration in EOS Moodle with access to the page where this complex is laid out is necessary. Files for downloading are executed in the MS WORD and PDF format.

**3. Special conditions of application and requirement of organizational, technical and technological character**

EUMK on discipline "Crisis management" is included in the package of free training materials available to students of the Nizhny Novgorod state pedagogical university of Kozma Minin.

The Intel Core I5 computer, with an operating system of Microsoft Windows 8.1 is necessary for work with EUMK. with access to the network the Internet via the Firefox browser 44.0.2, Opera, version 9 above, Mozilla or Google Chrome. The developed EUMK is placed on the server of Mininsky university, access to which is possible according to the reference: http://moodle.mininuniver.ru/course/view.php?id=582.

Access to an electronic resource on the Internet is provided in the presence of the corresponding connection both with server, and from the client party after authorization of the user in a private office in the electronic information and education environment of Mininsky university.

Other conditions of application and requirements of organizational, technical and technological character for operation of this resource are not required.

**4. Conditions of transfer of documentation on development or conditions of its sale**

Distribution and use of EUMK on discipline "Crisis management" can be exercised only with the consent of authors. EUMK can be transferred to the interested person or the organization on the basis of the contract according to the current legislation. Concerning acquisition it is possible to address in FGBOOU WAUGH "The Nizhny Novgorod state pedagogical university of Kozma Minin".

Address: 603950, Nizhny Novgorod, Ulyanov St., 1

Phone: +7(831)419-70-08; E-mail: mininuniver@mininuniver.ru.

## ADVERTISING AND TECHNICAL DESCRIPTION "Mass open online course "Biological Diversity (Theories, Measurement and Technology of Selection of Data) (Biological Diversity (Theories, Measures and Data Sampling Techniques))"

*Federal public autonomous educational institution of the higher education "National research Tomsk state university"*

*Gatti R.K.*

***UDC** 378, 502, 504, 574*

***GRNTI** 14.35.07, 14.37.01, 34.01.05, 34.03.17, 83.03.05*

**1. Functional purpose of a product, area of its application, its appointment**

About a format of representation of the course "Biological Diversity (Theories, Measurement and Technology of Selection of Data) (Biological Diversity (Theories, Measures and Data Sampling Techniques))"

The course "Biological Diversity (Theories, Measurement and Technology of Selection of Data) (Biological Diversity (Theories, Measures and Data Sampling Techniques))" is presented in the MOOK popular format. MOOK are the mass open online courses (English – Massive Open Online Course, MOOC) which are based on granting the academic courses from the leading world universities to any person in any corner of the globe by means of remote technologies with observance of accurate terms of delivery of intermediate and final test tasks and a possibility of the organization of free communication between teachers and listeners of a course.

Key features of MOOK are connected with realization of the principles of a continuity and individualization of education, with the solution of a problem of promoting of the modern scientific ideas "packed" into a form, available to understanding:

1. mass character which consists in limitlessness of number of listeners of a course and orientation to wide audience for which it is necessary "simply to tell about difficult";
2. openness which gives the chance to everyone to gain knowledge free of charge, remotely, in convenient time and in the place, convenient for the listener;
3. integrity of the courses including not just fragments of a training material, but also practical tasks, a communicative component, test materials;
4. an opportunity to receive the certificate in case of successful development of a course.

About the maintenance of the course "Biological Diversity (Theories, Measurement and Technology of Selection of Data) (Biological Diversity (Theories, Measures and Data Sampling Techniques))"

The course represents the review of the theoretical basis of evolution and dynamics of a biodiversity, and also methods of calculation and an assessment of a variety. Listeners will get acquainted with the main technicians of estimation alpha, beta and gamma diversity.

The understanding of how the biodiversity developed and continues to develop on Earth and also as it is correct to use and interpret data on a biodiversity, are important for all students who are interested in biology of conservation and ecology irrespective of whether they plan to

build career in science, policy or other areas. Researchers need to apply truly theories and indexes, and the high-ranking politicians have to understand and be able to interpret the conclusions offered by scientists.

Teacher

RobeAdvertising and technical description Catsolla Gatti (RobeAdvertising and technical description Cazzolla Gatti), Ph.D., associate professor of botany of Biological institute, employee of the center of superiority "Bioklimland" of National research Tomsk state university

Audience

The course will be useful to the students who are trained according to programs of a bachelor degree, magistracy, postgraduate study and also the scientists-researchers and experts conducting professional activity in the field of ecology and environmental management.

Cost and conditions of participation

The course is free. For participation it is necessary to be registered. Successfully mastered a course the opportunity of acquisition of the certificate of the Coursera platform is given. Placement of a course – according to the reference https://www.coursera.org/learn/biological-diversity.

Preparation level

For training at the rate it is necessary to have basic knowledge in the field of ecology and statistics, and also to own good knowledge of English.

**2. The used technical means**

Personal computer, earphones/column, Internet access

**3. Special conditions and requirements of organizational, technical and technological character**

Requirements of organizational character: for studying of a course it is necessary to be registered on the Coursera platform (https://www.coursera.org) and to sign up for a course. The course is free.

Requirements of technical character: Windows (XP, Vista, 7, 10), the Internet browser (Google Chrome, Mozilla Firefox, IE8 above), Adobe Flash Player, the video card with a memory size from 512 MB, the sound card, earphones or columns.

**4. Conditions of transfer of documentation or its sale**

The National research Tomsk state university possesses an exclusive right to all materials of a course which are result of intellectual activity.

## ADVERTISING AND TECHNICAL DESCRIPTION "Mass open online course "Life in the Soil"

*Federal public autonomous educational institution of the higher education "National research Tomsk state university"*

*Babenko A.S.*

***UDC** 378*

***GRNTI** 14.35.07, 34.35.15*

**1. Functional purpose of a product, area of its application, its appointment**

About a format of representation of the course "Life in the Soil"

The course "Life in the Soil" is presented in the MOOK popular format. MOOK are the mass open online courses (English – Massive Open Online Course, MOOC) which are based on granting the academic courses from the leading world universities to any person in any corner of the globe by means of remote technologies with observance of accurate terms of delivery of

intermediate and final test tasks and a possibility of the organization of free communication between teachers and listeners of a course.

Key features of MOOK are connected with realization of the principles of a continuity and individualization of education, with the solution of a problem of promoting of the modern scientific ideas "packed" into a form, available to understanding:

1. mass character which consists in limitlessness of number of listeners of a course and orientation to wide audience for which it is necessary "simply to tell about difficult";

2. openness which gives the chance to everyone to gain knowledge free of charge, remotely, in convenient time and in the place, convenient for the listener;

3. integrity of the courses including not just fragments of a training material, but also practical tasks, a communicative component, test materials;

4. an opportunity to receive the certificate in case of successful development of a course.

About the maintenance of the course "Life in the Soil"

The course is devoted to the review of the biological processes proceeding in the soil, and a role of live organisms in formation of the soil horizon. From this course listeners learn what role is played by soil organisms in global circulation of substance and energy, various systematic and trophic groups of soil animals will learn to distinguish, will be able to estimate their opportunities as indicators of a condition of land ecosystems. Also listeners of a course will have an opportunity to get acquainted with specifics of the animal population of soils of city ecosystems and agricultural grounds, to use data on ecology of soil organisms for processing of organic waste, creation of pochvozameshchayushchy mixes and improvement of soil fertility.

After end of this course listeners will be able to distinguish the main groups of soil organisms, to estimate their role in formation of a fertile layer of soils, will learn to understand ecological features of soil fauna and peculiar features of development and a way of life of the main representatives of soil fauna. Listeners will also have an opportunity to master simple methods of bioindication, increase of soil fertility, increase of productivity of a number of cultures and increase in efficiency of investments in own land plot.

Program of the course "Life in the Soil"

Module 1. Features of life in the soil and adaptation of organisms to soil conditions

1.1. Soil as specific habitat of live organisms

1.2. Biological processes at soil formation

1.3. Variety of soil inhabitants

1.4. Protozoa and nematodes – their communication with the soil and a role in soil processes

1.5. Main groups of pochvoobitayushchy insects

Test tasks to the module 1

Module 2. Food of soil inhabitants and detritny trophic networks

2.1. Trophic groups of soil organisms

2.2. Specifics of food of various groups of soil animals

2.3. The Annelidas living in the soil and their role in soil formation

2.4. Trophic and detritny networks

2.5. Features of detritny food networks in various climatic conditions

Test tasks to the module 2

Module 3. Soil organisms in agrotsenoza and urbatsenoza

3.1. A specific variety and specifics of the population of soil animals in agrotsenoza

3.2. Influence of agrotechnical actions on soil fauna of agrotsenoz

3.3. City climate and soil animals

3.4. Value of pedobiont for functioning of city ecosystems

3.5. Sinantropny invertebrates and their adaptations to the conditions created by the person

Test tasks to the module 3

Module 4. Use of animals for increase of fertility of soils

4.1. Soil organisms and fertility of soils
4.2. Use of animals for melioration of soils
4.3. Introduction of soil animals
4.4. Artificial cultivation of soil invertebrates
Test tasks to the module 4
Module 5. Soil animals as biological indicators of environment
5.1. Soil animals as biological indicators
5.2. Use of soil animals in radio ecological researches
5.3. Zone distribution of soil fauna
Total testing at the rate
Teacher

Andrey Babenko, Dr.Sci.Biol., professor, head of the department of protection of plants of Biological institute of National research Tomsk state university

Audience

The course will be useful to the students and graduate students specializing in the directions "Biology", "Soil science", "Agronomics", teachers of biological and agricultural disciplines of higher education institutions and schools and also is very interesting to agronomists, farmers and owners of the individual land plots, flower growers and just fans of the nature.

Cost and conditions of participation

The course is free. For participation it is necessary to be registered. Successfully mastered a course the opportunity of acquisition of the certificate of the Coursera platform is given. Placement of a course – according to the reference https://www.coursera.org/learn/life-in-soil.

Preparation level

For studying of this course knowledge of fundamentals of the general ecology is required.

**2. The used technical means**

Personal computer, earphones/column, Internet access

**3. Special conditions and requirements of organizational, technical and technological character**

Requirements of organizational character: for studying of a course it is necessary to be registered on the Coursera platform (https://www.coursera.org) and to sign up for a course. The course is free.

Requirements of technical character: Windows (XP, Vista, 7, 10), the Internet browser (Google Chrome, Mozilla Firefox, IE8 above), Adobe Flash Player, the video card with a memory size from 512 MB, the sound card, earphones or columns.

**4. Conditions of transfer of documentation or its sale**

The National research Tomsk state university possesses an exclusive right to all materials of a course which are result of intellectual activity.

# ADVERTISING AND TECHNICAL DESCRIPTION "Remote training course "Accounting financial statements and its analysis. Part II" (the direction of preparation 38.03.01 - Economy)"

*Federal public budgetary educational institution of the higher education "Ryazan state radio engineering university"*

*CHeglakova S.G., Karpunina E.V.*

***UDC** 378*

***GRNTI** 14.35.07, 06.35.00*

## 1 Functional purpose, scope, its restrictions

Remote training course "Accounting financial statements and its analysis. Part 2" it is developed for the students of full-time courses who are trained in the direction of preparation 38.03.01 "Economy" (bachelor degree level) the "Accounting, Analysis and Audit" profile.

The maintenance of a course is focused on formation at listeners of knowledge and skills in the field of the analysis of accounting financial statements of the organization, and also on development of technologies of distance learning with a possibility of their practical realization in the program Moodle environment.

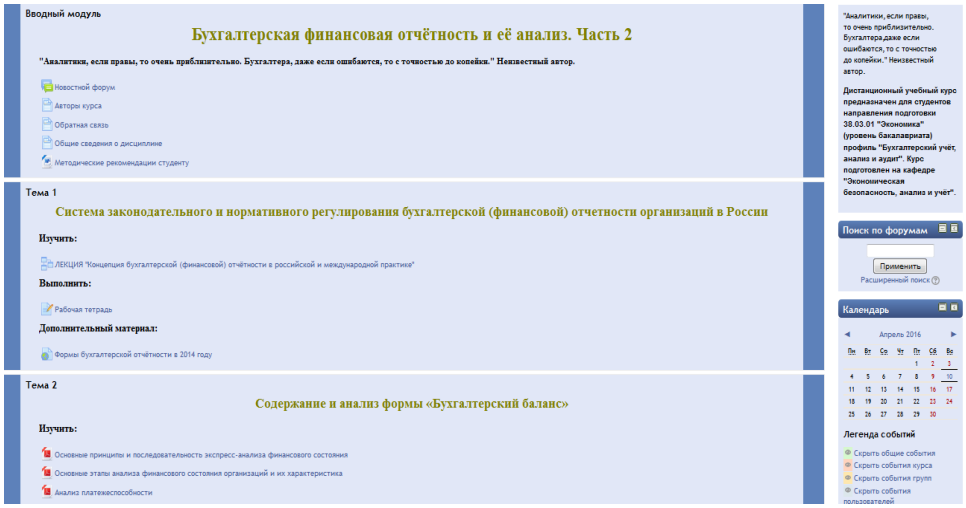



Fig. 1 Main page of a remote training course

The developed remote training course has modular structure. Each module represents the finished fragment with the didactic task directed to formation at teachers of certain professional competences.

Application of competence-based approach allows to concretize the maintenance of modules of a remote course taking into account the main activities of the teacher in system of distance learning. Modules of a course contain the theoretical, practical and controlling materials directed on: assimilation of the main directions of the analysis of financial statements; assimilation of methods of the analysis of financial statements; formation of skills of justification of conclusions and offers.

Listeners are provided with a set of electronic educational and methodical and reference materials, detailed instructions and methodical recommendations. Material is stated taking into account new legislative and normative documents. The directions, and also the main methods and receptions of the analysis of financial statements are stated. When performing tasks drawing up analytical tables and schedules is provided.

When developing materials of a remote course the basic principle of development of remote training courses – the most complete and evident idea of a training material providing them independent studying at individual speed and also creation of enough the internal and external relations allowing to organize effective and fast access for the trainee to necessary information was considered.

**2. Structure and conditions of application**

Remote training course "Accounting financial statements and its analysis. Part 2" consists of 7 modules and has the following structure:

1. Introduction module
2. System of legislative and standard regulation of accounting (financial) reports of the organizations in Russia
3. Contents and analysis of the Balance sheet form
4. Contents and analysis of the "Report on Financial Results" form
5. Contents and analysis of the "Report on Changes of the Capital" form
6. Contents and analysis of the "Report on Cash Flow" form
7. Final module

Information resources and interactive elements – theoretical materials, lectures, the presentations for lectures, practical tasks, workbooks, glossaries, tests, references to Internet resources are a part of each module.

As basic tools for development of a remote course freely extended software package of Moodle representing a learning management system in the electronic environment is used. This system was designed according to requirements of modern pedagogics and for level of the given opportunities bears comparison with the known commercial systems owing to what proved from a positive side in a number of foreign and Russian higher education institutions.

Educational and methodical materials of a remote course are presented in the form of files of various formats supported by Moodle (text and web pages, references to files (*.pdf, *.doc, *.ppt, *.gif, *.jpg, etc.), catalogs, archives (*.zip), audio and video files (*.mp3, *.swf, *.avi, *.mpg, *.flv, etc.), animation rollers, references to resources the Internet, etc.

Resources of a course can be studied directly on the computer, or to keep on the local computer for the press and further acquaintance. Interactive elements (workbooks, tasks of various types, glossaries (dictionaries at the rate), forums, chats, polls, tests) allow to focus attention of listeners on separate fragments of the studied material, to check the level of knowledge, to organize interaction of listeners with each other and with the teacher.

For work with a remote course it is recommended to use the Mozilla Firefox browser as when using other browsers correct work of the website of distance learning is not guaranteed.

Remote training course "Accounting financial statements and its analysis. Part 2" it is approved on the basis of the Ryazan state radio engineering university. The course can be used for support of training of teachers in internal and remote forms, and also the mixed form which combines classroom occupations with elements of distance learning.

**3. The used technical means**

Requirements to the personal computer of the user for work with a remote training course are presented in the table.

| | Office | |
|---|---|---|
| | At least | Optimum |
| Case (power supply unit) | Mini/Midi Tower of 350 W | Mini/Midi Tower of 350 W |
| Maternal payment (chipset) | AMD 740G + SB700 (CPU AMD),<br>NVIDIA GeForce 8200 (CPU AMD)<br>or Intel G41 + ICH7 (CPU Intel) | AMD 740G + SB710 (CPU AMD),<br>NVIDIA GeForce 8200 (CPU AMD)<br>or Intel G41 + ICH7 (CPU Intel) |
| CCP | AMD Athlon II X2 240 or<br>Intel Pentium Dual-Core E2180 | AMD Athlon II X2 255 or<br>Intel Pentium Dual-Core E5300 |
| RAM | 2 GB DDR2 800 (2□1 GB) | 2 GB DDR2 800 (2□1 GB) |

| | | |
|---|---|---|
| Hard drive (HDD) | SATA 250 GB, 7200 rpm | SATA 500 GB, 7200 rpm |
| Network, audio- and graphic (video) of a payment | integrated | integrated |

Work with a remote course requires existence of connection of the computer of the user to the Internet and access to the server of system of distance learning of higher education institution on which this course is placed.

**4. Conditions of transfer and sale of program documentation**

Distribution and use of a remote training course "Accounting financial statements and its analysis. Part 2" can be carried out only with the consent of authors.

Reference to a course: Duk_bukhgaltersky financial statements and its analysis. Chastii

The course can be transferred to the interested person or the organization on the basis of the contract according to the current legislation.

Concerning acquisition it is possible to address in FGBOU IN "RGRTU".

Address: 390005, Ryazan Gagarin St., 59/1

Phone: (4912) 46-04-37

E-mail: cdo@.rsreu.ru

## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic Course for Distance Learning of " Fundamentals of Geodesy and Topography " (UGSN 21.00.00 " Applied Geology, Mining, Oil and Gas Business and Geodesy ")"

*Dudnikov V.YU.*

***UDC*** *378:528.48*
***GRNTI*** *14.35.07, 36.23.31*

**1. Functional purpose of development, scope, its restrictions**

The course is intended for training of students in theoretical fundamentals of geodesy and topography, directed to formation of necessary skills and ideas of means and methods of works at land researches and aims at training of specialists which have to know the entrance and output planned and caAdvertising and technical descriptiongraphical documentation necessary for maintaining the primary production activity for a profile.

Disciplines of a land profile ("Engineering geodesy", "Fundamentals of topography", "Geodetic works in construction" and so forth) are part of the main educational programs of training of students of a set of the directions of preparation and specialties including UGSN 21.00.00 "Applied geology, mining, oil and gas business and geodesy".

The offered course is represented as the complete, intellectual, training system containing in the structure the knowledge base in the form of the electronic textbook which structure promotes complete perception of the main subjects of discipline.

First of all, material on fundamentals of topography is given: to a form and the sizes of Earth, the main systems of coordinates, orientation of lines on the district, to projection methods, topographical materials, their scales, nomenclatures, the image of a relief on maps and plans and so forth.

Further bases of geodetic production are consistently stated: geodetic networks (classification, construction methods), determination of coordinates by means of the global navigation satellite systems (GNSS), survey, remote methods of studying of a terrestrial surface and so forth.

According to a training course the purpose to give to students rather systematized and complex statement of knowledge of land production is set.

**2. The used technical means**

The technical means used during creation of educational and methodical materials it is the Intel Pentium computer (or the similar processor of other producers) with Windows 2000 OS (or above) and the software of MS Word, MS PowerPoint 2003 (or above).

**3. Special conditions of application and requirement of organizational, technical and technological character**

Treats necessary conditions of use of educational and methodical materials - existence of the computer with Windows OS * or Linux with the software Web Browser (Firefox, Opera, IE, etc.).

**4. Conditions of transfer of documentation on development or its sales**

Transfer of educational and methodical materials of an electronic course for distance learning of" Fundamentals of geodesy and topography" can be carried out on the basis of contracts.

Concerning acquisition of the manual it is necessary to address in FGBOOU WAUGH Ukhtinsky the state technical university.

Address: Pervomayskaya St., 13, Ukhta, Republic of Komi, 169300.

Ph.: +79042730864

E-mail: vdudnikov@ugtu.net

## ADVERTISING AND TECHNICAL DESCRIPTION "Methodical Instructions and Examinations on Discipline "Foreign Language" (German) for Students of Extramural Studies (the Direction — 08.03.01 "Construction", Level — a Bachelor Degree)"

*Kistanova L.P.*

***UDC 378***
***GRNTI*** *14.35.07, 16.41.21*

**1. Functional purpose of a product, scope, its restrictions**.

Methodical instructions and examinations are intended for the students of extramural studies of the direction of preparation 08.03.01 Construction (270800) (qualification (degree) "bachelor") learning a foreign language (German) as discipline of a basic unit of B.1.

Main objective of the examinations presented in this methodical development is realization of FGOS 3+ in this direction of preparation ordering as the main requirements of the state educational standard formation at graduates of such competences as possession of one of foreign languages at the level of professional communication and translation (OPK-9), ability to communication in oral and written forms in a foreign language for the solution of problems of interpersonal and cross-cultural interaction (OK-5).

For realization of an objective the grammatical and lexical material presented in "Methodical instructions and examinations" was selected by the principles of rate and communicative importance in the situations of professional communication defined according to the above-mentioned directions of training of students.

All material is constructed by a unified plan which basis the following principles are: complexity, systematicity and sequence of performance of tasks.

The grant includes methodical instructions on performance and registration of control tasks, preparation for examination and offset, 4 control tasks in 5 options everyone, and also the small grammatical reference on structural features of German, the list of questions and subjects for oral interview at offset/examination and is supplied with the thematic German-Russian dictionary of construction lexicon.

According to the curriculum and the program of this discipline of higher education institution students during a semester independently study the grammatical and lexical material

determined by the real methodical grant and carry out one of five presented options of a control task. Other options are recommended to be used as additional material for preparation for offset or examination.

Each of 4 Control tasks precedes the list of grammatical sections which need to be worked before starting direct performance of one of options of a control task.

The control task No. 1 includes such grammatical sections as

1. Word order in narrative, interrogative and imperative offers.
2. The main forms of verbs (weak, strong and wrong) in temporary forms prezens (Präsens), a preterite (Präterit), a perfect (Perfekt), pluskvamperfekt (Plusquamperfekt) and futurum (Futurum).
3. Modal verbs
4. Degrees of comparison of adjectives and adverbs
5. Numerals quantitative and serial
6. Denials of nicht and kein.
7. Difficult nouns.

The lexical component of the Control task No. 1 is based on the speech cliches and expressions including knowledge of the corresponding lexical units of German of the subject "Apartment, House, Dwelling, Interiors" according to which texts for the understanding reading and the translation are picked up.

The control task No. 2 is directed to control of digestion of the following grammatical material:

1. Participle of I (Partizip I) and participle of II (Partizip II) (education, use and transfer).
2. Indefinite-personal pronoun of man.
3. es pronoun.
4. Compound sentence and coordinative conjunctions.
5. Complex sentence and subordinating conjunctions, types of subordinate clauses.

The lexical component of the Control task No. 2 includes working off of above-mentioned grammatical material on speech cliches and expressions, on a subject: "Parts of the building" ("Gebäudeteile").

The control task No. 3 is constructed on fixing of communicative ability to use in written and oral speech of such grammatical designs as:

1. A passive (Passiv), an infinitive a passive (Infinitiv Passiv), - education, the use and transfer.
2. Passive design "sein + Partizip II".
3. Infinitive groups.
4. Infinitive turns "um... zu "," statt... zu "," ohne... zu".

The lexical component of the Control task No. 3 included tasks in specially picked up professionally focused texts "Construction types: block, panel, volume and frame construction" (Bauweisen: Blockbauweise, Plattenbauweise, Raumzellenbauweise, Skelettbauweise); "How the house is under construction?" (Wie wird ein Haus gebaut?).

The control task No. 4 demands independent studying of such grammatical sections as:

1. A design of haben or sein with an infinitive with zu.
2. Widespread definition.
3. A participle of I (Partizip I) with zu as definition.
4. The isolated participial phrase.
5. Pronominal adverbs.
6. Word formation and management of verbs.

Each of 5 options of the Control task No. 4 is based on the lexical units representing generally terminological and professional lexicon on a subject: "Construction materials: kolorpan, ondulin, izol, poroizol, fibreglass" (Baustoffe: Colorpan, Ondulin, Isol und Poroisol, Glasplaste).

Examinations contain lexical and grammatical tasks, various on structure and degree of complexity. Clearness of structure of examinations and allocation of the most significant sections from the lexical and grammatical point of view on each subject allows the student to pay more attention to independent studying of the most difficult language moments of a course, and to the teacher – to check the level of assimilation by students of lexicon and grammar of the sections mentioned above.

Tasks of examinations have communicative character and represent, as a rule, the original, almost not adapted texts of various types. All texts contain the informative information directed to formation at students of professional interest in the learned language and mastering by them a foreign language at the level of professional communication and translation. Implementation of recommendations and examinations will promote also formation at the trained skills of communication in oral and written forms for the solution of problems of interpersonal and cross-cultural professional interaction with native speakers.

**2. The used technical means**

Use of this methodical development and performance of the examinations included in it perhaps at presence at the student of the OS personal Pentium II, type and version computer: Windows 2000/XP.

3. Special conditions and requirements of organizational, technical and technological character are absent.

4. Conditions of transfer of development or its sale

Methodical instructions and examinations on discipline "Foreign language" (German) for students of extramural studies of the direction of preparation 08.03.01 Construction (270800) (qualification (degree) "bachelor") can be transferred to any educational institution or the natural person on the basis of the contract.

Contractual price.

E-mail: kist07@mail.ru

## ADVERTISING AND TECHNICAL DESCRIPTION "A multimedia educational and methodical complex for distance learning on discipline "French. The 2nd semester" (the direction - 45.03.02 – Linguistics, level - a bachelor degree)"

*Federal public budgetary educational institution of the higher education "Omsk state technical university"*

*Sokolova T.V.*

***UDC** 811.1/2*

***GRNTI** 16.41.21, 14.35.09, 14.85.09*

**1. Functional purpose of the program, scope, its restrictions**

Purpose of the multimedia educational and methodical complex (EMC) on discipline "French. The 2nd semester" (45.03.02 – Linguistics) independent use by students as educational and methodical materials at distance learning for theoretical preparation, performance of practical works and self-examination. Multimedia UMK is suitable for maintenance of all types of educational activity at full-time courses.

During creation of a multimedia educational and methodical complex for distance learning on discipline "French. The 2nd semester" author's materials were used: drawings, tables, test blocks. The resources which are available in free access on the Internet were in addition used.

Training materials have:

- the accurate modular structure coordinated with the working program of discipline;
- complexity (include theoretical, practical, control materials);

- completeness of a statement;
- high extent of visualization (i.e. contain illustrations, charts, schemes, video fragments, etc.).

Training materials display the modern level and scientific achievements in the respective sphere.

UMK "French. 2 semester" contain 7 multimedia slide lectures and videos of 4 practical works:

1. Multimedia slide lectures:

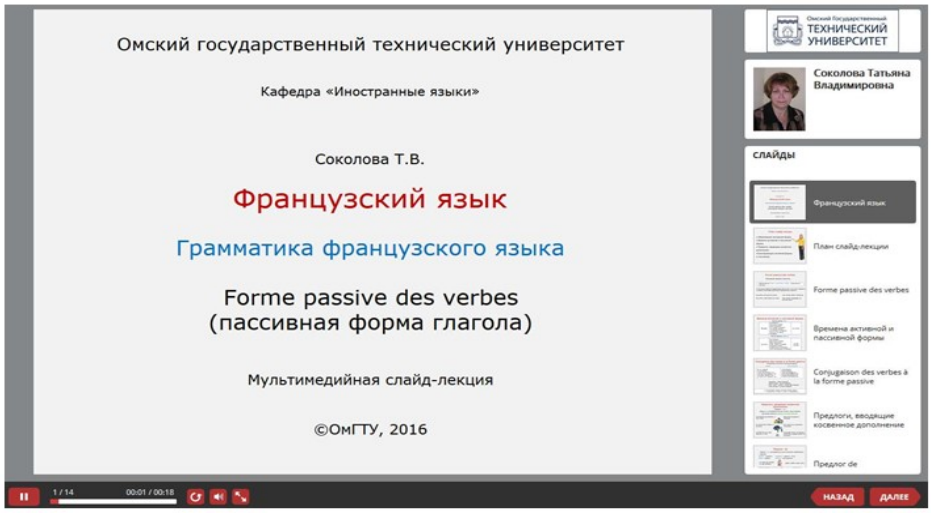



Fig. 1. Example of multimedia slide lecture

1.1. Multimedia slide lecture "Temps immédiat. The near future. Direct past." - 26,5 MB.
1.2. Multimedia slide lecture "Forme passive. Passive form of a verb." - 46,4 MB.
1.3. Multimedia slide lecture "Adjectifs possessifs. Possesive adjectives." - 37,0 MB.
1.4. Multimedia slide lecture "Adjectif. Adjective." - 60,3 MB.
1.5. Multimedia slide lecture "Adjectifs pronominaux. Pronominal adjectives" - 59,7 MB.
1.6. Multimedia slide lecture "Omsk". - 72,9 MB.
1.7. Multimedia slide lecture "La Russie. Russia." - 89,0 MB.

2. Videos of practical work:

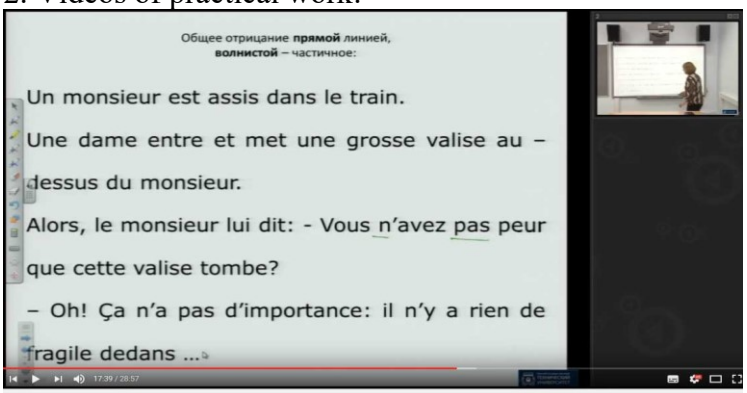



Fig. 1. Example of video of practical work

2.1. Video of practical work "Temps immédiat. The near future. A direct past" - 590,5mb.
2.2. Video of practical work "Forme passive. A passive form" - 750,0 MB.
2.3. Video of practical work "L'adjectif. An adjective" - 630,0 MB.
2.4. Video of practical work "Adjectifs pronominaux. Pronominal adjectives" - 470,0 MB.

Total: 2832,7 MB

EUMK is approved in Omsk the state technical university on specialties of extramural studies.

As technical means for creation of components of multimedia UMK on discipline "French. 2 semester" software products were used: Power Point, iSpring Suite, Echo360

hardware and software system. The main advantages of these tools is ease and speed of the created materials.

Video of lectures was made in specially equipped audience with use of an interactive board. Videos are placed on the Echo360 system server with access on the Internet and on a local network of higher education institution.

**2. The used technical means**

2.1. For development of a multimedia educational and methodical complex for distance learning on discipline "French. 2 semester" the following equipment rooms and software are necessary:

1. Computer and AMD Phenom (tm) II processor.
2. Random access memory – 4096 MB.
3. Summary space on the hard drive of 1024 MB.
4. Color SVGA monitor of the computer resolution 1024x768 and above.
5. Operating system: Windows 7.
6. iSpring Suite 7.

2.2. For functioning of a multimedia educational and methodical complex for distance learning on discipline "French. 2 semester" the user the following equipment rooms and software are necessary:

When viewing on the computer:

37. Computer and Intel/AMD processor of 1 GHz or above.
38. Random access memory – 1024 MV.
39. Free space on the hard drive of 1024 MB.
40. Color SVGA monitor of the computer resolution 1024x768 and above.
41. Operating system: Windows XP/Vista/7/8, Macintosh, Linux.
42. Software: Internet Explorer 6 above, Mozilla Firefox 3.x above, Safari 3 above, Google Chrome, Opera 9.5 above, Adobe Flash Player 10.1 or above.

For viewing on mobile devices:

1. Mobile devices with resolution 480x320 and above.
2. Operating system: Mobile: Android 3.x or higher, iPad, iPad2, The New iPad (iOS 5.x or higher), Windows Phone 7.5 or higher, Windows RT.
3. The software for mobile devices. Desktop: Internet Explorer 9 or higher, Safari 5 or higher, Mozilla Firefox 12 or higher, Opera 11.6 or higher, Google Chrome 18 or higher.

**3. Special conditions of application and requirement of organizational, technical and technological character**

Application of an educational and methodical complex for distance learning on discipline "French. 2 semester" it is possible in the conditions of a modern educational computer class, and also on mobile devices of pupils at network placement of a complex with access on the Internet. The complex is placed in a cloud service of iSpring Cloud to the address https://ispri.ng/XKxq.

**4. Conditions of transfer and sale of program documentation**

Multimedia educational and methodical complex for distance learning on discipline "French. 2 semester" and documentation to it can be given to the interested person or the organization on the basis of the contract with OMGTU and the author according to the current legislation.

**ADVERTISING AND TECHNICAL DESCRIPTION "Remote training course "Integral calculus. Linear spaces. The ordinary differential equations and appendices" (the direction of preparation 11.03.01 – Radio engineering)"**

*Federal public budgetary educational institution of the higher education "Ryazan state radio engineering university"*
*Il'in M.E.*

***UDC** 378*
***GRNTI** 14.35.07, 27.29.00*

**1 Functional purpose, scope, its restrictions**

Remote training course "Integral calculus. Linear spaces. Functions of several variables. The ordinary differential equations and appendices" it is developed according to the Federal state educational standard of higher education for the direction of preparation 11.03.01 "Radio engineerings".

The course is intended for training of students of the above-stated direction during the second semester on the following subjects: Also focuses "Numerical methods", "Uncertain integral", "A certain integral", "Linear spaces", "Functions of several variables", "The ordinary differential equations" and "Integrated transformation of Laplace" on acquisition of knowledge and abilities, formation of mathematical culture that allows students to study successfully special disciplines on older years.

As basic tools for development of a remote course freely extended software package of Moodle representing a learning management system in the electronic environment is used. Connection of external references to resources of the Internet allows to expand the educational environment due to attraction of additional sources of information. The system provides also interactive interaction between participants of educational process, and also carrying out different types of control of progress.

The developed remote training course "Integral calculus. Linear spaces. Functions of several variables. The ordinary differential equations and appendices" (see fig. 1) .imet modular structure. Each module represents the finished fragment with the didactic task directed to formation at the trained certain professional competences.

During creation of a remote course the basic principle – the most complete and evident idea of a training material providing them independent studying and self-checking at individual speed and also the organization of effective and fast access for trainees to necessary information and educational resources was considered. Interactive elements of communicative appointment allow to come into expeditious contact of the student with the teacher of a course, to get necessary advice in the on-line mode.

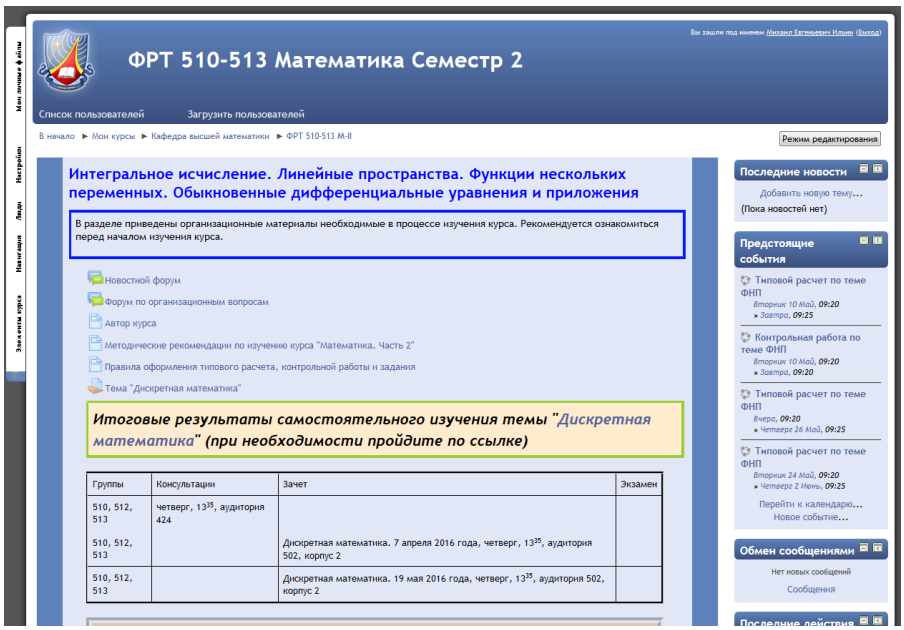



Fig. 1 Main page of a remote training course

2. **Structure and conditions of application**

Remote training course "Integral calculus. Linear spaces. Functions of several variables. The ordinary differential equations and appendices" consists of 10 modules and has the following structure:

| № | Name of the module | Contents |
|---|---|---|
| 1 | Introduction module | • news forum;<br>• forum on organizational issues;<br>• author of a course;<br>• methodical recommendations for students about studying of modules of a remote course;<br>• rules of registration of standard calculation, examination and task;<br>• lesson schedules, consultations, offset and examination;<br>• working program of discipline;<br>• reference to the remote course "Discrete Mathematics" |
| 2 | Numerical methods. Approximate methods of search of roots of the equations | • the lectures on the corresponding subject containing the studied material, examples of the solution of standard tasks;<br>• interactive questions and tasks of a subject for independent work;<br>• variants of tasks for standard calculation;<br>• tests on a section subject;<br>• results of performance of examination.<br>• Results of performance of homeworks |
| 3 | Uncertain integral | |
| 4 | Certain integral | |
| 5 | Linear spaces | |
| 6 | Functions of several variables | |
| 7 | Ordinary differential equations and systems of the equations | |
| 8 | Integrated transformation of Laplace | |
| 9 | Intermediate certification | • Program of examination in mathematics;<br>• Qualification test;<br>• Final test;<br>• Results of entrance control;<br>• Results of visit of lectures and practical training; |

| № | Name of the module | Contents |
|---|---|---|
| | | • Results of performances at the Olympic Games in a subject<br>• Results of performances during "Knowledge Day";<br>• Additional points for attentive reading of a course. |
| 10 | Help section | • glossary;<br>• reference to the website of department of the higher mathematics of RGRTU;<br>• freely extended the Internet – resources on mathematics |

Educational and methodical materials of a remote course are presented in the form of files of various formats supported by Moodle (text and web pages), references to files (*.pdf, *.doc, *.ppt, *.gif, *.jpg, etc.), catalogs, archives (*.zip), references to resources the Internet, etc.

The lectures (only 17) located in thematic modules of a course are interactive, contain necessary theoretical material which is supplied with the color illustrations animated by drawings and control questions.

Each lecture is followed by in detail solved examples, color illustrations. Tasks for independent work are taken out in separate resources: "Questions on subjects …".

Lectures and practical works can be studied directly from the computer screen, or to keep on the local computer for listing and further acquaintance.

Numbers house a task are provided in each subject, in the same place and results of their performance are reflected.

The examinations on subjects provided by the working program are carried out by students in the off-line mode and sent to check to the teacher in the form of PDF files or the firm copy.

The course contains the reference to an educational resource – the remote course "Discrete Mathematics" which results of studying are considered in the course.

The qualification test contains 8 - elementary questions which knowledge is absolutely necessary for the trainee. Certification - 6 questions (three theoretical and three practical) which in a random way get out of voprosny base.

Interactive elements (lectures, the glossary, forums, tests) allow to focus attention of students on separate fragments of the studied material, to check the level of knowledge, to organize interaction of listeners with each other and with the teacher.

Remote training course "Integral calculus. Linear spaces. Functions of several variables. The ordinary differential equations and appendices" it is approved in educational process of internal office of RGRTU.

**3. The used technical means**

Work with a remote training course requires presence at the user of the computer of office configuration with connection in the Internet (it is recommended to use the MozillaFirefox or GoogleChrome browser) and access to the server of system of distance learning of higher education institution on which this course is placed. **Viewing of the training material presented in different formats, performance of tasks on subjects of a course requires installation of the corresponding software:**

- programs for viewing of PDF files (ADOBE Reader, FoxitReader, etc.);
- programs for archiving of files (7zip, etc.);
- package of office programs (OpenOffice, MS Office);
- programs for use of the built-in editor of formulas (Java (JRE));
- freely extended car Java.

Access to a remote course can be provided when using mobile devices that found confirmation in practice of training of students of RGRTU with application of a PDA of dellaxim x51v (WindowsMobile 6.1 OS); iPaD (IOS 5.0.10 OS), etc.

**4. Conditions of transfer and sale of program documentation**

Distribution and use of a remote training course "Integral calculus. Linear spaces. Functions of several variables. The ordinary differential equations and appendices" it can be carried out only with the consent of the author.

Reference to a course: http://cdo.rsreu.ru/login/index.php

The remote course can be transferred to the interested person or the organization on the basis of the contract according to the current legislation.

Concerning acquisition it is possible to address in FGBOU VPO "The Ryazan state radio engineering university".

Address: 390005, Ryazan Gagarin St., 59/1

Phone: (4912) 46-03-51

E-mail: cdo@.rsreu.ru

## ADVERTISING AND TECHNICAL DESCRIPTION "International Competition in Informatics and Information Technologies of Infoznayk 2016"

*Sofronova N.V., Grigor'ev YU.V., Bel'chusov A.A.*

***UDC*** *373.1:371.8*
***GRNTI*** *14.25.19, 14.27.05, 14.27.09*

**1. Functional purpose of the program, area of its application, its restriction**

The international competition in informatics and the information INFOZNAYKA-2016 technologies will be moved public organization "Chuvash Regional Office of Academy of Informatization of Education" (OO ChRO AIO).

Enter into the international organizing committee of the competition "INFOZNAYKA": Bekkozhina T.A. (Kazakhstan), Belchusov A.A. (Russia), Verner I.F. (Korea), Grinevich A.I. (Ukraine), Epaneshnikov A.I. (Kazakhstan), Ziyatdinova G. M. (Uzbekistan), Ignatyev E.A. (Russia), Kovalyova E.V. (Ukraine), Korkotsa I.F. (Latvia), Sadiyev A.A. (Kyrgyzstan), Sofronova N. V. (Russia).

Main objective of a competition - activization of cognitive interest of school students in the field of informatics and information technologies.

All teachers (teachers) are coordinators of a competition:

- receive official messages of thanks or diplomas (for long-term participation in a competition or a large number of the attracted pupils);
- have an opportunity to take part free of charge in the All-Russian remote conference "Internet Technologies in Education";
- have an opportunity free of charge to publish article in the collection of the All-Russian conference "Internet Technologies in Education" and to receive the certificate on the publication and the collection;
- have an opportunity to participate free of charge in webinars on the education informatization problems which are carried out by the Chuvash regional office of Academy of informatization of education as the speaker or the listener and to receive the corresponding certificate;
- have an opportunity to complete advanced training courses of teachers of the 36-hour program "Solution of Non-standard Tasks in Informatics".

Teachers in a competition can have the status of the school or regional coordinator. The contract - the offer is signed with each school coordinator. Regional coordinators are appointed

by the organizing committee of the competition "INFOZNAYKA", the organizing committee of a competition signs the additional individual contract with them.

Tasks are subdivided into five levels:

- initial (1-2 classes);
- preparatory (3-4 classes);
- propaedeutic (5-7 classes);
- snovny (8-9 classes);
- general education (10-11 classes and Susa).

For each level the tasks considering proficiency of pupils in the field of informatics will be offered. Problems of initial and preparatory levels are designed for the pupils who were not studying informatics. Problems of propaedeutic level are focused on the pupils having initial skills of work with the computer and who began to study an informatics course. Problems of the main and general education levels are designed for the pupils studying informatics at basic general education level. Tasks of profound level – for the pupils studying informatics it is more, than 1-2 lessons a week (profile level).

Tasks for a competition are made by organizers of a competition: doctors and candidates of pedagogical, psychological and technical science. All tasks are author's. Expertize of tasks is carried out by school teachers of informatics of the highest category. Level of complexity of tasks is defined after a competition depending on the number of the participants who truly answered each task

For preparation for a competition tests of last years, the reference to the Infoznayka mobile application, the game quest "Infoznayki's Adventures" are uploaded to the website www.infoznaika.ru. The organizing committee annually publishes collections of tasks with answers and analyses of solutions of complex challenges for last games (since 2005) which can or be downloaded from the website www.infoznaika.ru (in pdf a format), or to order in paper option, having contacted the organizing committee. Discussion of tasks, the organization of a competition and so forth are carried out on the All-Russian Internet teachers' meeting to the address www.pedsovet.org and on the website of creative teachers of www.it-n.ru. The electronic mailing group functions

For support of a competition on the website www.infoznaika.ru for each teacher who is the coordinator of a competition at school or the region there is "Private office" which completely automates its work of participation in a competition (submits the application, enters personal information, makes out the contract, sends answers of participants of a competition and receives results of check, gets acquainted with statistics of a competition in school and the region, etc.)

Diplomas, certificates, thanks and diplomas are sent by the organizing committee in a paper form after holding a competition

**2. The used technical means**

For use of tasks of a competition in extracurricular activities use of a multimedia projector is desirable. For carrying out game it is necessary to print tasks for each participant on the printer.

3. Special conditions of application and requirement of organizational, technical and technological character

Tasks can be seen and printed by means of Adobe Reader of any version. Conditions of some tasks contain color drawings therefore it is desirable to print them on the color printer with high resolution. For creating favorable conditions and reduction of exhaustion of eyes it is recommended to work at the modern computer which part the monitor with a bigger frequency of change of shots (frequency of vertical development) is. Inadmissibly, if it less than 50 Hz, are also desirable that it was more than 70 Hz. It is recommended to use the monitor of an optimum

configuration – with the diagonal of 17 inches, 80 Hz with a frequency of vertical development and the point size on the screen of 0,26 mm.

**4. Conditions of transfer of program documentation or its sale**

Tasks for the game competition "Infoznayka-2016" are not a commercial product and everyone can receive them from the website www.infoznaika.ru

## ADVERTISING AND TECHNICAL DESCRIPTION "The Program MDAITool 1.0 Complex " Design of Information Systems " (the Direction 09.00.00 — " Informatics and Computer Facilities ", a Profile — a Magistracy, DO, PPK)"

*Iskhakov R.A., Malikov R.F.*

***UDC*** *378*
***GRNTI*** *14.35.07, 14.35.21, 14.35.09, 20.01.45, 50.41.29*

**1. Functional purpose of a product, area of its application, its appointment**

The program MDAITool 1.0 complex submits the appendix with the graphic interface using set from 9 algorithms for a combinatory assessment of the size of space of processing and the analysis of images. The graphic interface is developed on the basis of GUI of the MATLAB editor (fig. 1). Algorithms are realized in the M-Editor MATLAB editor.

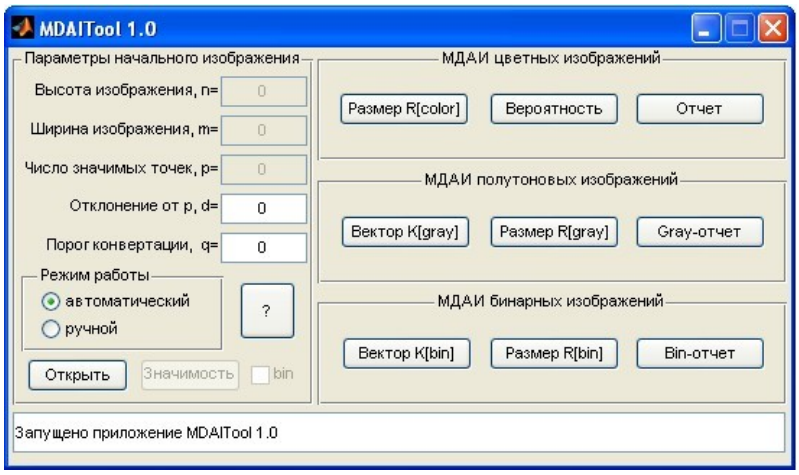



**Fig. 1.** Graphic interface of the application of MDAITool 1.0.

Algorithms of the MDAITool appendix use the formulas formulated in the theory of the modified descriptive algebras of images (MDAI) and MDAI proved by her author Iskhakov A.R. Teoriya are applied by spatial approach to processing and the analysis of images to its combinatory assessment. MDAI are specialization of the descriptive algebras of images (DAI) of I.B. Gurevich (VTs of A.A. Dorodnizyna RAHN). In difference, from DAI, MDAI allows to use further genetic algorithms for optimization of the varied parameters of the systems of technical and computer sight (in programs or mathematical models) developed in the environment of MATLAB.

For use of the appendix it is necessary to prepare color images (the full-color image, in the R, G and B components, or the RGB image) dimensions no more than 800x600 pixels. Such restriction is connected with big computing expenses of system. In case of an assessment of images of bigger dimension the initial image needs to be broken into fragments, in compliance with the provided requirements (such operation is similar to manual segmentation). It is also necessary to prepare its binary image (the black-and-white image received by converting of the initial full-color image). Use of the built-in system of the help and control of actions of the user allow easily and to receive the shortest time for the selected images a combinatory assessment of their spaces. These calculations, according to the theory of MDAI, give a probabilistic assessment of quality of the recorded image for contactless measurement of signs of observed

objects. Process of fixing of images in MDAI is iterative. The calculated probability of quality of the image allows to organize specification of the selected images because the selected initial image can not guarantee measurements with the set accuracy.

Systems of technical and computer sight in the modern world occupy a big segment in the market of contactless information and measuring systems. Development of numerical methods and methods of measurements gave a strong impetus to development of this segment. Emergence of a wide range of applied decisions enshrined in them belief of consumers. However, as shows experience, not all decisions yield optimum and the required accuracy result. The offered appendix allows the user to investigate any such system and to pick up for it optimum values of the varied parameters with the set accuracy. Its interface is simple in use that is caused by group of the operating elements and existence of the built-in system of the help, and also the emerging hints on each of appendix elements. The developed system of the reporting allows to obtain information on current state of operation of application, on the performed operations and results of calculations. It is recommended to use the application at an investigation phase of the systems of technical and computer sight processing and analyzing images in the optical range. With its help it is also possible to receive an assessment of quality of the chosen initial data.

**2. The used technical means**

For work with the program it is necessary to have the following minimum means:

1. the computer with the microprocessor not below Pentium and the mathematical coprocessor, Pentium III, Pentium IV, Pentium M or AMD Athlon, Athlon XP, Athlon MP processors are recommended (the latests version of MATLAB 2007a, b support dual-core processors, for example the Intel Core 2 Duo series, and MATLAB R2007b supports quad-core processors, for example, of Intel Core 2 Quad);
2. the device of reading of kompakt_disk (CD_ROM or DVD drive), a mouse, 8_razryadny the graphic adapter and the monitor maintaining not less than 256 colors;
3. the Windows XP/2000/NT/Vista operating system (the Windows NT4 from servis_paketa 5 or 6a is allowed);
4. The RAM with a capacity of 256 MB for the minimum option of system (it is recommended to have memory of 512 MB and above);
5. to 3200 MB of disk space at full installation of all expansions and all help systems (345 MB at installation only MATLAB with the reference);
6. free USB port for connection of the key opening access to system.

**3. Special conditions and requirements of organizational, technical and technological character**

The program complex has to be decompressed in the mdai folder on any way. Files of a program complex (the mdai folder with all contents) before its use and start of the MATLAB environment have to be copied in the folder to the address "MATLAB FOLDER\toolbox\. In case of successful installation of a program complex, in the environment of MATLAB to appear the reference to the appendix on the next way: Start→Toolboxes→MDAI→MDAITool.

**4. Conditions of transfer of documentation or its sale**

Concerning paid acquisition of a program complex by the natural person or legal entity to address the developer by e-mail intellab@ mail.ru or to the address 450000, the Republic of BashkoAdvertising and technical descriptionstan, Ufa center, st. October revolution, 3A, BGPU of M. Akmulla, "The Bashkir state pedagogical university", department of information and printing systems and technologies. Iskhakov A.R. In educational or research establishments the program complex can be transferred on a grant basis in the educational or research purposes, in case of signing of the bilateral agreement about use of the software product.

## ADVERTISING AND TECHNICAL DESCRIPTION "The complex test module on discipline "Information security"

*Nazarova O.V.*

***UDC*** *378.14*
***GRNTI*** *14.35.07, 81.96.00*

**1. Functional purpose of the program**

This software product is intended for carrying out test and control test classes in discipline "Information security" for students of the direction of preparation 09.03.03 "Applied informatics" of the educational organizations of the higher education.

The presented software application is written in the Java Script and HTML language. The following modules are a part of this program project:

- the short theoretical section and the glossary on discipline "Information security";
- the test module containing tests for control of knowledge (figure 1).

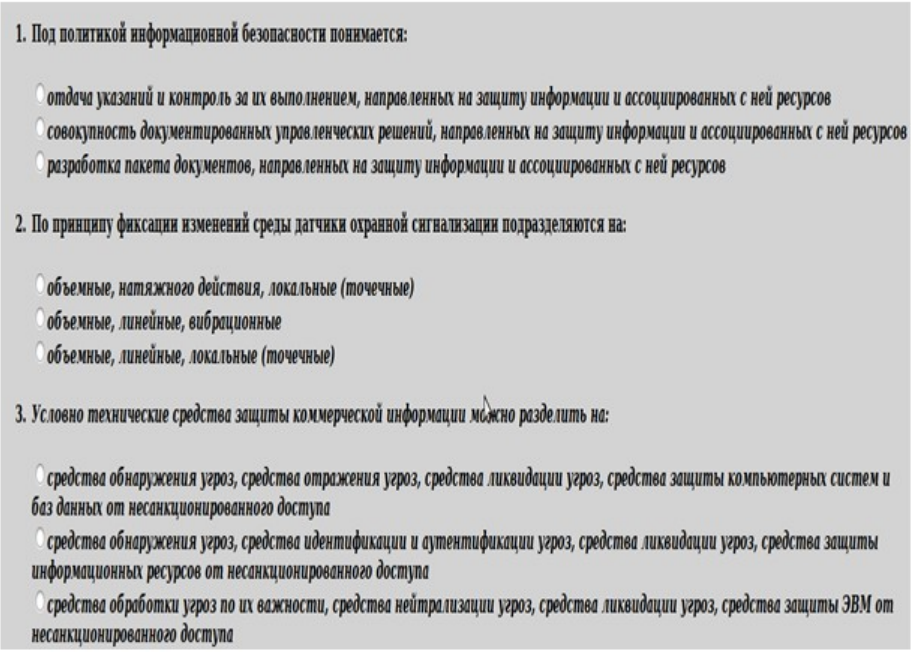



Figure 1 – The test with the choice of one correct answer

**2. Program scope**

The set of tests on discipline "Information security" for students of the educational organizations of the higher education of the direction of preparation 09.03.03 "Applied informatics" is used by teachers for the purpose of check of level of training of students of the studied sections of the above-stated discipline.

This software product has the ergonomic intuitive interface thanks to what users (both students, and teachers) will be able quickly to adapt to work with the program.

The set of test tasks provides examination of students according to the following sections:

- Bases of protection of computer information;
- Cryptographic methods and means of information protection;
- Information security in computer networks;
- Protection of computer information against influence of malicious applications;
- Management of access to computer information.

**3. The used technical means**

This program imposes some requirements to hardware and program part:

- the Intel Pentium processor (or Pentium-compatible) with a clock frequency of 133 MHz or above;
- the hard drive with a capacity of 1 Gbyte, with a capacity of free space not less than 650 MB;
- the CD ROM device or the DVD device with a possibility of loading of this program from a compact disk;
- mouse;
- keyboard;
- monitor;
- Windows or Linux OS (with the installed emulator).

For installation through a network on the computer it is necessary to have one or several network adapters allowing to get access to the shared network folder containing distributive files

At the above-stated characteristics of hardware and program part this appendix will work without failures.

**4. Special conditions of application**

This program can work in Linux-like operating systems in the presence of the Wine emulator, etc. The submitted appendix can be transferred for use to the educational organizations of the higher education for the contract with the author.

## ADVERTISING AND TECHNICAL DESCRIPTION "Tests on Discipline of " the Concept of Modern Natural Sciences "

*Dzhimbeeva L.N.*

***UDC*** *378*
***GRNTI*** *14.35.07, 02.31.00, 29.01.00, 31.01.00, 34.01.00*

**1. Functional purpose of development, scope, its restrictions**

The electronic course "Tests on KSE" is important addition of discipline of "The concept of modern natural sciences" for the students who are trained in the directions "Public and Municipal Administration", "Management", "Human resource management", "Mathematics and Computer Sciences" "Psychology" and other directions. The electronic course is one of methodical developments on discipline of "The concept of modern natural sciences": A grant with a signature stamp of UMO "Concepts of Modern Natural Sciences", "Glossary on KSE", methodical instructions on discipline of KSE for students of various directions, an educational and methodical grant of "10 Lectures on KSE". This course is based on long-term experience of teaching discipline of "The concept of modern natural sciences" in the Kalmyk state university.

The training course considered electronic is developed within realization of FGOS of the listed above directions, the discipline of "The concept of modern natural sciences" is entered as obligatory into many standards of formation of the different directions.

Course purpose: increase of level of training of students, expansion of their scientific outlook for understanding of modern basic researches and use of knowledge in applied tasks.

The purpose of the course "Concepts of Modern Natural Sciences" - formation of a complete frame of reference on world around ***that*** **through system of knowledge of the regularities and laws existing in the nature to expand representations** ***of students:***

• about the place of the person in evolution of Earth;

• about the directions and ways of development in scientific and technical and organizational and economic fields of activity of the person;

• about use of new approaches *to* achievement of higher level of survival of mankind in the conditions of the approaching environmental disaster.

According to a goal this course has the following **tasks**:

• to inform students of the main concepts of modern natural sciences;

• to give to students of idea of the uniform development covering inanimate nature, live substance and society; about the levels of the organization of a material world and processes which are proceeding in it, acting as links of one chain;

• to arm students with knowledge of regularities of development of the nature and society;

• to form skills of practical use of the achievements of science setting as an ultimate goal adaptation of the person to environment and achievement of rational environmental management;

to orient in the main paradigms of unity of the material and spiritual worlds;

• to acquaint with the most important methods of bioethics.

**1.1. Content of discipline** covers a circle of the questions connected with formation at students of a complex of knowledge of structure of natural-science knowledge of system and concepts of modern natural sciences, about an origin and evolution of the Universe and life for formation of a complete view of world around. Because, knowing laws of development of natural systems, it is easier to be guided in the choice of a way of development of human society. In discipline such questions as are considered: natural-science and humanitarian cultures; scientific method; natural sciences history; panorama of modern natural sciences; development tendency; corpuscular and continual concepts of the description of the nature; an order and a disorder in the nature; chaos; structural levels of the organization of matter; micro, macro - the megaworlds; space, time, principles of relativity; principles of symmetry; conservation laws; interaction; short-range interaction; long-range action; state; principles of superposition, uncertainty, complementarity; dynamic and statistical regularities in the nature; energy conservation laws in microscopic processes; principle of increase of entropy; chemical processes; reactionary ability of substances; internal structure and history of geological development of the earth; modern concepts of development of geosferny covers; lithosphere as abiotic basis of life; ecological functions of a lithosphere; resource, geodynamic, geofiziko-geochemical, geographical envelope of Earth; features of biological level of the organization of matter; principles of evolution, reproduction and development of live systems; variety of live organisms – a basis of the organization and stability of the biosphere; genetics and evolution; person: physiology, health, emotions, creativity, working capacity; bioethics, person, biosphere and space cycles: a noosphere, irreversibility of time, self-organization in live and inanimate nature; principles of a universal evolutionism; way to uniform culture.

Teaching discipline provides the following forms of the organization of educational process: lectures, practical training, independent work of the student.

The program of discipline provided the following types of control: the current control of progress in the form of tests, reports and polls on seminar and lecture occupations, and also, intermediate control during intersession certification in the form of the report and protection of papers, total control in the form of offset.

The general labor input of development of discipline makes 2 test units, 72 hours. The program of discipline provided lectures (18 hours), a practical training (18 hours) and independent work of the student (36 hours).

**Content of discipline: Lectures**

| No. of a payment order | Number of the section of discipline | Volume, hours | Lecture subject |
|---|---|---|---|
| 1 | 1 | 2 | Natural sciences science methodology |
| 2 | 2 | 2 | General scientific approaches and methods of research |
| 3 | 3 | 2 | Natural-science revolutions, their essence and mechanism |
| 4 | 3 | 2 | Main concepts of physics and space models of the |

| | | | |
|---|---|---|---|
| | | | Universe |
| 5 | 3 | 2 | Theory of chaos and order |
| 6 | 4 | 2 | Chemical concepts in natural sciences |
| 7 | 4 | 2 | Biology in modern natural sciences |
| 8 | 4 | 2 | Biosphere and noosphere |
| 9 | 4 | 2 | Person as piece of natural-science knowledge |
| Total: | | 18 | |

**Practical training**

| No. of a payment order | Number of the section | Volume, hours | Subject of practical occupation |
|---|---|---|---|
| 1 | 1 | 2 | Subject, tasks and features of modern natural sciences |
| 2 | 2 | 2 | Structure and methods of scientific knowledge |
| 3 | 3 | 2 | Physical concepts of natural sciences |
| 4 | 3 | 2 | Synergetrics as perspective direction of science |
| 5 | 3 | 2 | Integration of natural sciences, tekhnikoznaniye and chelovekoznaniye |
| 6 | 4 | 2 | Chemical concepts of natural sciences |
| 7 | 4 | 2 | Biological concepts of natural sciences |
| 8 | 4 | 2 | Basis of an ecological picture of the world |
| 9 | 4 | 2 | Greening of modern natural sciences |
| Total: | | 18 | |

1.2. The electronic course has modular structure and consists of sections:

- Methodology and history of natural sciences (144 tasks).
- Cosmology (43 tasks).
- Physics (329 tasks).
- Chemistry (71 tasks).
- Biology and geology ((332 tasks).

All modules come to an end with test tasks which results of performance are summarized and on an exit from an electronic course are transferred to the teacher (on 6 questions to each subject).

The controlling material includes tests of the current control of knowledge of students and the test of independent control of knowledge.

Tests on check of the current knowledge of students are divided into various sections and the final test on check of the gained knowledge of all course.

In each section of the test of the current control of knowledge there are about 25 tasks of which about 5 tasks in a random way get out. Tests for check of the current knowledge are carried out within 25 minutes.

In this development the example of creation of a test cover and the guide to performance of test tasks is given.

1.3. The assessment of knowledge of students for a semester is carried out on the rating system developed by the author considering the current, intermediate and total control.

When developing a grant the author sought not only for performance STATE, but also to the maximum simplicity of a statement of material at all course. The real grant can be used by students and other specialties and the directions.

The grant is developed so that gives the chance of its universal use through Internet, in local networks, in the remote training and counseling centers and branches, and also on separate computers of trainees.

**2. The used technical means**

The software is written for work in an operational environment of the Windows XP, but can also work in the Windows 95 and Windows 98 environments. The Internet Explorer browser and capacity of random access memory not less than 512 MB is necessary for steady work of the program.

By preparation of training materials the standard software of Microsoft Office was used. For a number of educational elements except means of HTML JavaScript and Flash-technologies, SMART Notebook were used.

The electronic training course is intended for work on the personal computer under control of OS of Microsoft Windows family of the XP version above. The required volume of random access memory – 512 MB.

The volume of the occupied disk space on a portal – 32 MB.

**3. Special conditions of application and requirement of organizational and technological character**

On a subject matter of "The concept of modern natural sciences" of the requirement to classroom fund usual. The organization of educational process for this discipline requires use of the audience equipped with multimedia system. Besides, in need of demonstration to students of practical examples use of a computer class is possible. Ensuring independent work of students does not require the additional equipment. Independent work is carried out by the student in library, or on the Internet.

**4. Conditions of transfer of program documentation or its sale**

This manual is property of department of theoretical physics of KGU and extends by agreement with the author.

## ADVERTISING AND TECHNICAL DESCRIPTION "The Working Program for Discipline " Hi-tech Methods of Radiodiagnosis " for Trained in the Direction of Specialty 31.05.01 Medical Case"

*Lezhnev D.A., Popov N.V., Ivanova I.V., Makarova D.V*

***UDC*** *615.849*
***GRNTI*** *14.35.07, 76.29.62*

**1. Functional purpose of a product, scope, its restrictions**

The working program for discipline "Hi-tech methods of radiodiagnosis" are made on the basis of requirements of the Federal state educational standard of the higher education to a minimum of contents and level of preparation for trained in the direction of preparation (specialty) 31.05.01 Medical case. The discipline "Hi-tech methods of radiodiagnosis" is realized in variable part of the curriculum of training of the expert for trained in the direction of preparation 31.05.01. Medical business of full-time courses.

Discipline purpose:

To develop the correct idea of opportunities of beam methods of research at the student and to teach to form the most effective tactics of beam inspection of patients with various pathology taking into account further training and professional activity in "Medical business".

Problems of discipline:

1) training of students in theoretical knowledge of opportunities of modern methods of radiodiagnosis;

2) training of students in the correct formulation of indications to beam inspection of patients with justification of those tasks which in the course of inspection the radiologist has to solve;

3) training of students in skills of an assessment of roentgenograms, receiving visual idea of the morphological and functional changes in body characteristic of various pathological processes.

Competences trained, the disciplines formed as a result of development:

PK-1 Ability and readiness for implementation of a complex of the actions directed to preservation and promotion of health and including formation of a healthy lifestyle, the prevention of emergence and (or) distribution of diseases, their early diagnostics, identification of the reasons and conditions of their emergence and development, and also directed to elimination of an adverse effect on health of the person of factors of the environment of his dwelling

PK-5 Readiness for collecting and the analysis of complaints of the patient, the yielded his anamnesis, results of survey, laboratory, tool, pathoanatomical and other researches for recognition of a state or establishment of the fact of existence or absence of a disease

PK-6 Ability to definition at the patient of the main pathological states, symptoms, syndromes of diseases, nosological forms according to the International statistical classification of the diseases and problems connected with health, the X revision

PK-8 Ability to definition of tactics of maintaining patients with various nosological forms

PK-11 Readiness for participation in rendering an emergency medical service at the states demanding urgent medical intervention

Content of discipline:

Subject 1. IT technologies in medical visualization

Systems of transfer and archiving of DICOM of images. Types (modalities) of the medical images supported by the DICOM standard. Safety of PACS archives and workstations.

Subject 2. A multislice computer tomography in diagnosis of diseases of bodies of a thorax

Computer and tomographic symptoms of inflammatory, volume and interstitsialny diseases of lungs

Subject 3. A conical and beam computer tomography in the characteristic of bone structure

Physical principles of obtaining conical and beam images, advantages and shortcomings. Possibilities of a conical and beam tomography in an assessment of traumatic damages and postoperative complications.

Subject 4. A multislice computer tomography in diagnosis of pathology of an urinary system

Computer and tomographic symptoms of inflammatory diseases of an urinary system and at oncological processes. Use of contrast agents when carrying out a computer tomography in urology.

Subject 5. Radiodiagnosis at obstructive diseases of zhelchevyvodyashchy ways of the Possibility of various methods of radiodiagnosis at a syndrome of mechanical jaundice. Reasons of development of mechanical jaundice. The comparative analysis of methods in differential diagnostics of the reasons of obstructive diseases of zhelchevyvodyashchy ways.

Subject 6. A multislice computer tomography at diseases of ENT organs

Computer and tomographic symptoms of sharp and chronic sinusitis. Odontogenny sinusitis. Possibilities of a method in an assessment of a temporal bone and throat.

The information technologies used at implementation of educational process on discipline:

1) the situational tasks illustrated by beam images – for working off of skill of the analysis of beam images, allocation of the leading beam syndrome, the description of pictures in the form of the protocol, creation of algorithm of beam inspection;

2) tasks in the form of cases – the analysis of the situations based on base of keysovy tasks in which the main sources are clinical records, cards of patients, anamnesis fragments, beam images;

3) the thematic presentations with tasks prepared by teachers – the computer presentations with existence of detailed tasks for independent work of the student.

Intermediate certification for discipline is carried out in the form of offset. Offset consists of two stages: estimates of practical abilities of the student and interview. Stages of offset are carried out upon termination of studying of discipline in a semester.

Table 1. Estimation of knowledge

| Assessment | Evaluation criteria |
|---|---|
| It is reckoned | "Is reckoned" it is exposed trained, owning the main sections of the program of discipline, a necessary minimum of knowledge and capable to apply them on a sample in a standard situation |
| It is not reckoned | "Is not reckoned" it is exposed trained, shown superficial knowledge that does not allow it to apply the acquired knowledge even on a sample in a standard situation |

Evaluation criteria according to the content of discipline (module) and practical ability are exposed taking into account activity trained on classroom occupations, qualitatively performed tasks. Practical preparation is carried out on occupations on bases of MGMSU department of A.I. Evdokimov

Table 2. Estimation of practical ability

| Assessment | Evaluation criteria |
|---|---|
| It is reckoned | It is exposed to the student who revealed the systematized, profound and full knowledge according to all sections of the training program, according to separate sections of discipline (total control – offset) or on all questions of a subject of occupation (the current control), able to state logically correctly and consistently the answer to questions, owning terminology in "Radiodiagnosis", able to show beam methods of research and anatomic educations, capable to do generalizations and conclusions, to solve situational problems, shown understanding in indications to the use of beam methods in clinical medicine which is actively working at a practical training, taking part in group discussions of the studied material |
| It is not reckoned | It is exposed to the student who revealed the fragmentary and incomplete volume of knowledge within the educational standard insufficient for the subsequent studying of theoretical and clinical disciplines found vital issues in digestion of material of separate sections of discipline (total control – offset), or occupation subject material (the current control) which showed insufficient pithiness and logical sequence in a statement of the answer to questions, inability to allocate the main thing in the answer, insufficient possession of beam terminology and skills of demonstration of anatomic educations, misunderstanding of essence of the major beam semiotics signs, not differing in activity on a practical training |

**2. The used technical means**

"Hi-tech methods of radiodiagnosis" for the graduate of medical school in "Medical business" on the computer of the user are necessary for use of the working program for discipline the following equipment rooms and software:

1. Intel x86/AMD 64 personal computer

2. Random access memory – 1024 MV.
3. Free space on the hard drive of 640 MB.
4. The color SVGA monitor with resolution 600x800 and above.
5. OC Windows 2003

**3. Special conditions and requirements of organizational, technical and technological character**

When carrying out occupations of lecture type the sets of the demonstration equipment and educational visual aids providing thematic illustrations are used. For carrying out classroom occupations various equipment is used.

**4. Conditions of transfer of documentation on development or conditions of its sale**

The materials "The Working Program for Discipline " Hi-tech Methods of Radiodiagnosis " for Trained in the Direction of Specialty 31.05.01 Medical Case" are transferred by a group of authors on demand on a grant basis at obligatory copyright compliance. No part of the working program can be reproduced in any form without written permission of owners of copyright.

## ADVERTISING AND TECHNICAL DESCRIPTION "Estimated Materials on Discipline "Radiodiagnosis" for Trained in the Direction of Specialty 31.05.01 Medical Case"

*Lezhnev D.A., Ivanova I.V., Makarova D.V.*

***UDC*** *615.849*
***GRNTI*** *14.35.07, 76.29.00*

**1. Functional purpose of a product, scope, its restrictions**

The fund of estimated means of discipline "Radiodiagnosis" is created for control of knowledge and level of formation of competences at trained in the direction of specialty 31.05.01 Medical case. The fund of estimated means establishes compliance of knowledge and level of formation of competences at trained in requirements of the working program of discipline "Radiodiagnosis".

Purpose of estimated means defines its use for measurement of the level of achievements which is trained as a result of training in one subject (section) and/or set in those of discipline "Radiodiagnosis".

Tasks for the current control and carrying out intermediate certification are directed to estimation:

- level of development of theoretical concepts, scientific bases of professional activity;
- degrees of readiness trained to apply theoretical knowledge and professionally significant information, formation of cognitive abilities;
- the acquired abilities, professionally significant for professional activity.

Control tasks and other materials have the praktiko-focused complex character, are directed to formation and fixing of common cultural, all-professional and professional competences.

The current control is intended for check of the course and quality of formation of competences, stimulation of study of trainees and a sovershensvovaniye of a technique of development of new knowledge.

Intermediate certification is intended for determination of level of development of all studied volume of a subject matter (module).

Procedure of estimation of results of training is carried out with use of mark and rating system.

When using mark and rating system the formation mechanism (what it consists of) estimates on discipline (module) depends on requirements to threshold values of achievements on controlled kinds of activity of trained.

The control tasks or other materials necessary for an assessment of the knowledge, abilities, skills and (or) experience of activity characterizing stages of formation of competences of process of development of an educational program: control questions, practical tasks, test tasks, situational tasks.

***Control questions:***

1. Methods of obtaining medical diagnostic images. History of development of a radiology
2. Nature and properties of H-beams. Device of a x-ray tube. Techniques of radiological research: X-ray analysis, roentgenoscopy. Aim and survey roentgenogram
3. Skialogichesky (shadow) features of the radiological image: positive, negative, plane, summatsionny, increased, geometrical and dynamic unsharpness. Natural contrast. Quality standard of the shadow image
4. Computer Tomography (CT). Concept about multislice KT. Indications and contraindications to performance of KT. Basic elements of the diagnostic equipment. Haunsfild's scale. Value of KT-numbers in differential diagnostics. Bolyusny contrasting
5. Physics and technology bases of the magnetic and resonant tomography (MRT). Absolute and relative contraindications to research
6. Physical bases of a method of ultrasonic diagnostics. Concept about an ekhogennost
7. Classification of the contrast means used in radiodiagnosis. Water-soluble iodinated contrast agents. The chemical factors defining safety of contrast agent. Collateral reactions to introduction of contrast substances. The contrast-induced nephropathy
8. Principles of radiation safety: rationing, justifications, optimization. Concept about an effective dose. Means of radiation protection
9. Requirements to quality of a picture. Criteria for an assessment of quality of the roentgenogram
10. Share and segmentary structure of lungs. A projection of shares and segments of a lung on the direct and lateral roentgenogram
11. The X-ray anatomic characteristic of a root of a lung is normal. Criteria for a lung root assessment
12. X-ray anatomic characteristic and criteria for an assessment of pulmonary drawing
13. Sredosteniye X-ray anatomy. The radiological picture of heart and large vessels is normal
14. Rentgenopatomorfologichesky bases of a syndrome of total (subtotal) blackout. Characteristic of blackout of lungs
15. Rentgenopatomorfologichesky bases of a syndrome of limited blackout. Characteristic of limited blackout of lungs
16. Rentgenopatomorfologichesky bases of a syndrome of an enlightenment. Characteristic of an enlightenment of lungs
17. Rentgenopatomorfologichesky bases of a syndrome of a round (spherical) shadow. Characteristic of spherical blackout of lungs
18. Rentgenopatomorfologichesky bases of a syndrome of an air cavity (ring-shaped shadow). The characteristic of a ring-shaped shadow in lungs
19. Rentgenopatomorfologichesky bases of a dissemination. Characteristic of disseminirovanny damages of lungs
20. Rentgenopatomorfologichesky bases of change of a root of a lung. Characteristic of a root of a lung
21. Rentgenopatomorfologichesky bases of change of pulmonary drawing. Pathological characteristic of pulmonary drawing
22. Rentgenopatomorfologichesky bases of change of provision of a cardiovascular shadow

23. Rentgenopatomorfologichesky bases of change of a configuration of a cardiovascular shadow
24. The principles of differential radiodiagnosis at diseases of bodies of a thorax
25. Scheme of the analysis of pathological changes of bodies of a thorax
26. X-ray diagnostic symptoms of an acute pneumonia. Radiological types of an infiltration of a pulmonary parenchyma at pneumonia
27. X-ray diagnostic signs it is purulent - destructive processes of lungs (lung abscess)
28. X-ray diagnostic signs of a gidrotoraks
29. X-ray diagnostic symptoms of the central cancer of lung
30. X-ray diagnostic symptoms of peripheral cancer of lung
31. X-ray diagnostic symptoms of metastatic tumors of lungs
32. Changes of a form and size of a bone
33. Atrophy. Types of a bone atrophy
34. Radiological signs of changes of bone structure
35. Osteoporosis. Types of osteoporosis. Radiological symptoms of osteoporosis
36. Osteonecrosis. Radiological signs of an osteonecrosis
37. Osteosclerosis. Types of an osteosclerosis. Radiological signs of an osteosclerosis
38. Sekvestration and her outcomes
39. X-ray semiotics of changes of a periosteum
40. Anchylosis. Types of an anchylosis. Radiological signs of an anchylosis
41. Radiological stages of development of the deforming arthrosis
42. Change. Classification of changes by localization
43. Radiological symptoms of a fracture of bone
44. Phases of formation of a bone callosity
45. Types of pathological healing of fractures of bones
46. False joint. Radiological signs of a false joint
47. Incomplete dislocation. Radiological signs of an incomplete dislocation
48. Dislocation. Radiological symptoms of dislocation
49. Complications of injuries of joints. Radiological symptoms of the combined fracture with dislocation
50. Tactics of radiological inspection of patients with injuries of bones and joints.
51. Osteomyelitis phases. Radiological symptoms of osteomyelitis
52. Osteoma. Types ostey. Radiological signs of an osteoma
53. Radiological symptoms of an ekzostozno-epifizarny dysplasia. Differential diagnostics of a solitary ekzostoz
54. Hondroma. Radiological signs of a hondroma
55. Osteokhondroma. Radiological signs of an osteokhondroma
56. Gemangioma. Radiological signs of a gemangioma
57. Typical radiological signs of good-quality new growths of bones
58. Osteoklastoma. Radiological signs of an osteoklastoma
59. Osteogene sarcoma. Radiological signs of a lytic form of osteogene sarcoma
60. Miyelomny illness. Radiological symptoms of a miyelomny illness
61. Metastatic damage of a skeleton. Radiological signs of metastatic damage of bones. Differential diagnostics
62. Phases of artificial contrasting of hollow body: hard filling, double contrasting, relief mucous, full fall. Values of various phases of contrasting in studying of structure and function of body
63. Technique of radiological research and normal X-ray anatomy of a gullet. Anatomic narrowings of a gullet. Gullet segments on Brombara. Indications to research
64. Technique of radiological research, normal X-ray anatomy of a stomach and duodenum. Sequence of phases of contrasting, value of a compression tube. Absolute and relative indications to research

65. Techniques of research and normal X-ray anatomy of a thick gut. Indications to performance of an irrigoskopiya. Training of the patient for research. Sequence of phases of contrasting at an irrigoskopiya. Primary double contrasting

66. Rentgenopatomorfologichesky bases of syndromes of diseases of a digestive tract: narrowing and deformation of hollow body, expansion and deformation, depot of contrast substance, defect of filling, change of a relief of a mucous membrane, violation of elasticity and a vermicular movement of hollow body, an exit of contrast substance out of limits of hollow body. Characteristic of syndromes of diseases of a digestive tract

67. General principles of differential radiodiagnosis of good-quality and malignant defeats of bodies of a digestive tract

68. X-ray diagnostic symptoms of hernia of esophageal department of a diaphragm

69. Dysfunction of a gullet: akhalaziya, cardiospasm, insufficiency of kardialny department of a stomach

70. X-ray diagnostic symptoms of a divertikulyarny illness (single and multiple diverticulums) of a digestive tract. Complications of a divertikulyarny illness, radiological signs of a divertikulit

71. Radiological symptoms of stomach ulcer

72. Radiological symptoms of cancer of stomach depending on a form of growth of a tumor (ekzo-endofitny, mixed)

73. The radiological analysis of changes at a colon cancer of various localization

74. Position of kidneys. Sizes of kidneys. Contours of kidneys

75. Structure of a parenchyma of kidneys. Kidney sine. Blood supply of kidneys

76. Survey urography. Research performance technique. Indications to performance of a survey urogramma

77. Structure cup lokhanochnoy systems. Lokhanka structure types. Forms of a structure of an excretory tree

78. Excretory urography. Research performance technique. Indications and contraindications to performance of excretory urography

79. Mochetochniki. Physiological narrowings and bends of mochetochnik. Radiological visualization of mochetochnik

80. Bladder. Radiological criteria for evaluation of a bladder

81. Anomalies of kidneys and mochetochnik

82. Retrograde piyeloureterografiya. Indications and contraindications to research. Research shortcomings

83. Retrograde tsistografiya. Indications and contraindications to research. Research performance technique

84. Reasons of development and radiological symptoms of pheumothorax

85. Radiological signs of the complicated pheumothorax forms: intense pheumothorax, haemo pheumothorax, pnevmomediastinum, including hypodermic and intermuscular emphysema

86. Rules of implementation of the survey roentgenogram of abdominal organs (laying of the patient, coverage of the roentgenogram). Purpose of performance of this type of research

87. Radiological signs of perforation of hollow body (pnevmoperitoneum)

88. Radiological signs of a pnevmoretroperitoneum

89. Algorithm of beam inspection at suspicion on perforation of hollow body

90. Reasons of development and radiological signs of tonkokishechny impassability

91. Reasons of development and radiological signs of tolstokishechny impassability

***Practical tasks:***

1. Find the survey and aim roentgenogram of bodies of a thorax in your package. Designate the main bodies and structures

2. Carry out the analysis of the roentgenogram according to the offered scheme, issue the protocol of the description:

*Scheme of the analysis*
*First name, middle initial, last name patient, age*
*Date of the description of a picture*
*Research method*
*Research technique*
*Area of research*
*Research projection (direct, lateral, slanting)*
*Type of the image (negative or positive)*
*Quality of a picture (contrast – a difference in extents of blackening of various sites of a film, degree of structure – quality of the image of fine details)*

3. Carry out the analysis of the roentgenogram with artificial contrasting according to the offered scheme, issue the protocol of the description:

*Scheme of the analysis*
*First name, middle initial, last name patient, age*
*Date of the description of a picture*
*Research method*
*Research technique*
*Area of research*
*Research projection (direct, lateral, slanting)*
*Type of the image (negative or positive)*
*Quality of a picture (contrast – a difference in extents of blackening of various sites of a film, degree of structure – quality of the image of fine details)*
*Analysis of artificial contrasting:*
*- what contrast substance is applied*
*- in what body there is a contrast substance*
*- by what way contrast substance was entered*
*- estimate distribution of contrast substance*

4. On the offered computer tomogram designate the main bodies and structures. Estimate density of structures on Haunsfild's scale

5. From the offered computer tomograms select the images with bolyusny intravenous contrasting. Call area of research, the main bodies and structures
and contrasting phase (arterial, venous, secretory)

6. Carry out the analysis of the submitted conclusion on MRT of lumbar and sacral department of a backbone. Find the anatomical structures and symptoms specified in the protocol on images

7. Receive at the teacher the roentgenogram of bodies of a thorax in a direct projection. Correctly establish a picture on the negatoscope. Estimate quality of the executed roentgenogram

8. Receive the bronkhogramma executed in a direct projection at the teacher call and specify share and segmentary bronchial tubes

9. On the roentgenogram of bodies of a thorax specify borders of pulmonary fields and a projection of shares of lungs in a direct and lateral projection

10. On the roentgenogram of bodies of a thorax offered by the teacher define anatomical structures of a chest wall, lungs and a sredosteniye

11. On the roentgenogram of bodies of a thorax find forward and back pieces of edges, bone parts of edges and border of their transition to cartilaginous in a direct projection. Be trained to consider edges on forward and back pieces

12. On the tomogram of bodies of a thorax submitted by the teacher specify a lung root, analyse intra pulmonary part of a root of a lung taking into account necessary criteria

13. Receive at the teacher the roentgenogram of bodies of a thorax in a direct projection, find images of pulmonary vessels, pay attention to their caliber and an arrangement. Find shadows oAdvertising and technical descriptiongradno of the located vessels

14. On the roentgenogram of bodies of a thorax in a direct projection define an air column of a trachea and estimate the provision of a sredosteniye

15. On the roentgenogram of bodies of a thorax in a direct projection visually draw a paravertebralny line and the sredneklyuchichny line on the right at the left. Define borders of a cardiovascular shadow

16. According to the roentgenogram of bodies of a thorax specify in a direct projection and call arches of a cardiovascular shadow on the right and its left contour

17. From the images of bodies of a thorax offered by the teacher, define the roentgenogram with blackout and an enlightenment of the pulmonary field

18. Receive at the teacher a picture of bodies of a thorax with a syndrome of total (subtotal) blackout, estimate quality of the executed roentgenogram. Analyse a radiological picture, define the provision of a sredosteniye and nature of blackout

19. Receive at the teacher a picture of bodies of a thorax with a syndrome of limited blackout, estimate quality of the executed roentgenogram. Analyse a radiological picture, define share and segmentary localization of pathological process

20. From the images of bodies of a thorax offered by the teacher, define the roentgenogram with disseminirovanny process. Tell classification of disseminirovanny processes in lungs. Determine by the roentgenogram dissemination type depending on center size

21. Receive at the teacher a picture of bodies of a thorax with the changed lung root, estimate quality of the executed roentgenogram. Analyse a radiological picture, define nature of change of a root of a lung

22. Receive at the teacher a picture of bodies of a thorax with the changed pulmonary drawing, estimate quality of the executed roentgenogram. Analyse a radiological picture, define nature of change of pulmonary drawing

23. From the images of bodies of a thorax offered by the teacher, define roentgenograms with a pneumonic infiltration. Correctly interpret a radiological picture, specify share and segmentary localization of pathological process, the leading radiological syndrome, infiltration type, write the protocol of research in the form of the connected text

24. Receive at the teacher a picture of bodies of a thorax with lung abscess. Specify the leading radiological syndrome, a dynamic characteristics of process, write the protocol of research in the form of the connected text

25. From the images of bodies of a thorax offered by the teacher, define roentgenograms with gidrotoraksy (small, average, big). Correctly interpret a radiological picture, specify the leading radiological syndrome, write the protocol of research in the form of the connected text

26. From the images of bodies of a thorax offered by the teacher, specify pictures with symptoms of peripheral cancer of lung. Using differentsialno a diagnostic row correctly interpret a radiological picture and write the protocol of research in the form of the connected text

27. Receive at the teacher a picture of bodies of a thorax with metastatic damage of lungs. Specify the leading radiological syndrome, type metastazirovanya, write the protocol of research in the form of the connected text

28. From the images of bodies of a thorax offered by the teacher, specify pictures with symptoms of the central cancer of lung. Using differentsialno a diagnostic row correctly interpret a radiological picture and write the protocol of research in the form of the connected text

29. Receive at the teacher of the roentgenogram of an occupation subject. Correctly establish pictures on the negatoscope. Define their projections. Give X-ray anatomic orientation. Estimate correctness of performance of the presented pictures. Specify external and internal contours of bones, a gleam of the marrowy channel, articulate surfaces and a gleam of an articulate crack

30. Receive at the teacher the roentgenogram of a long tubular bone with capture of a nearby joint. Correctly establish a picture on the negatoscope. Define the studied segment. Estimate situation, an axis, size and a shape of a bone, external and internal contours of kortikalny plates and bone structure of a bone on all visible extent

31. Receive at the teacher the roentgenogram of a long tubular bone with capture of a nearby joint. Define the studied segment. Correctly establish a picture on the negatoscope. Call departments of a bone on all visible extent

32. Receive at the teacher of a rentegnogramma of a knee joint. Correctly establish pictures on the negatoscope. Define their projections. Study articulate surfaces of bones, contours and thickness of switching plates, a condition of a subkhondralny layer, bone structure of epifiz and gleams of articulate cracks

33. Receive at the teacher of a rentegnogramma of an occupation subject. Correctly establish pictures on the negatoscope. Define their projections and the studied anatomic segment. Reveal and call the signs of pathological changes of bone structure presented in pictures

34. Receive at the teacher of the roentgenogram of an occupation subject. Correctly establish pictures on the negatoscope. Define their projections and the studied anatomic segments. Choose from the presented pictures on what osteosclerosis signs are visualized

35. Receive at the teacher of the roentgenogram of an occupation subject. Correctly establish pictures on the negatoscope. Define their projections and the studied anatomic segments. Choose from the presented pictures on what osteonecrosis signs are visualized

36. Receive at the teacher of the roentgenogram of an occupation subject. Correctly establish pictures on the negatoscope. Define their projections and the studied anatomic segments. Choose from the presented pictures on what signs of an osteoliz are visualized

37. Receive at the teacher of the roentgenogram of an occupation subject. Correctly establish pictures on the negatoscope. Define their projections and the studied anatomic segments. Choose from the presented pictures on what symptoms of osteoporosis are visualized

38. Receive at the teacher of the roentgenogram of an occupation subject. Correctly establish pictures on the negatoscope. Define a projection and the studied anatomic segment. On the example of this image describe radiological signs of changes of a periosteum

39. Receive at the teacher of the roentgenogram of an occupation subject. Correctly establish pictures on the negatoscope. Define their projections. Give X-ray anatomic orientation. Specify symptoms of a fracture and its localization. Estimate a condition of edges of bone otlomk

40. Receive at the teacher of the roentgenogram of an occupation subject. Correctly establish pictures on the negatoscope. Define their projections. Give X-ray anatomic orientation. Specify symptoms of a fracture and its localization. Estimate the shift of otlomk

41. Receive at the teacher of the roentgenogram of an occupation subject. Correctly establish pictures on the negatoscope. Define their projections. Give X-ray anatomic orientation. Specify symptoms of a fracture and its localization. Estimate correctness of comparison of otlomk

42. Receive at the teacher of the roentgenogram of an occupation subject. Correctly establish pictures on the negatoscope. Define their projections. Give X-ray anatomic orientation. Estimate consolidation of the former otlomk

43. Receive at the teacher of the roentgenogram of an occupation subject. Correctly establish pictures on the negatoscope. Define their projections. Give X-ray anatomic orientation. Estimate the created bone callosity

44. Receive at the teacher of the roentgenogram of an occupation subject. Correctly establish pictures on the negatoscope. Define their projections. Give X-ray anatomic orientation. Specify radiological signs of pathological healing of a change

45. Receive at the teacher of the roentgenogram of an occupation subject. Correctly establish pictures on the negatoscope. Define their projections. Give X-ray anatomic orientation. Estimate relationship of articulate surfaces of bones in joints on all visible extent

46. Receive at the teacher of the roentgenogram of an occupation subject. Correctly establish pictures on the negatoscope. Define their projections. Give X-ray anatomic orientation. Specify the direction of dislocation

47. Receive at the teacher of the roentgenogram of an occupation subject. Correctly establish pictures on the negatoscope. Define their projections. Give X-ray anatomic orientation. Estimate post-traumatic changes of bones and surrounding soft fabrics

48. Receive at the teacher of the roentgenogram of an occupation subject. Correctly establish pictures on the negatoscope. Define their projections. Give X-ray anatomic orientation. Specify radiological symptoms of osteomyelitis

49. Receive at the teacher of the roentgenogram of an occupation subject. Correctly establish pictures on the negatoscope. Define their projections. Give X-ray anatomic orientation. Specify signs of a good-quality new growth of a bone, define its localization

50. Receive at the teacher of the roentgenogram of an occupation subject. Correctly establish pictures on the negatoscope. Define their projections. Give X-ray anatomic orientation. Define to what good-quality new growth there can correspond the radiological picture. Specify its localization

51. Receive at the teacher of the roentgenogram of an occupation subject. Correctly establish pictures on the negatoscope. Define their projections. Give X-ray anatomic orientation. Choose the roentgenogram on which signs, the most characteristic of a compact osteoma are visualized. Prove the choice. Specify localization of this new growth

52. Receive at the teacher of the roentgenogram of an occupation subject. Correctly establish pictures on the negatoscope. Define their projections. Give X-ray anatomic orientation. Choose the roentgenogram on which signs, the most characteristic of an osteokhondroma are visualized. Prove the choice. Specify localization of this new growth

53. Receive at the teacher of the roentgenogram of an occupation subject. Correctly establish pictures on the negatoscope. Define their projections. Give X-ray anatomic orientation. Choose the roentgenogram on which signs, the most characteristic of a gigantokletochny tumor are visualized. Prove the choice. Specify localization of this new growth

54. Receive at the teacher of the roentgenogram of an occupation subject. Correctly establish pictures on the negatoscope. Define their projections. Give X-ray anatomic orientation. Choose the roentgenogram on which signs, the most characteristic of a solitary bone cyst are visualized. Prove the choice. Specify localization of this new growth

55. Receive at the teacher of the roentgenogram of an occupation subject. Correctly establish pictures on the negatoscope. On roentgenograms of various anatomic segments of a skeleton the multiple centers of osteolytic destruction of various sizes are defined. Some of them merge among themselves. Formulate the radiological conclusion

56. Receive at the teacher of the roentgenogram of an occupation subject. Correctly establish pictures on the negatoscope. Define their projections. Give X-ray anatomic orientation. Specify signs of a malignant new growth of a bone, define its localization

57. Receive at the teacher of the roentgenogram of an occupation subject. Correctly establish pictures on the negatoscope. Define their projections. Give X-ray anatomic orientation. Define to what malignant new growth there can correspond the radiological picture. Specify its localization

58. Receive at the teacher of the roentgenogram of an occupation subject. Correctly establish pictures on the negatoscope. Define their projections. Give X-ray anatomic orientation. Choose the roentgenogram on which signs, the most characteristic of a sclerous form of osteogene sarcoma are visualized. Prove the choice. Specify localization of this new growth

59. Receive the roentgenogram of a gullet at the teacher, specify and call gullet segments on Brombara

60. Receive at the teacher the roentgenogram of a stomach and duodenum in a phase of hard filling, consistently show and call departments of a stomach and duodenum

61. From the images offered by the teacher, specify the roentgenogram of a stomach the patient executed in vertical and horizontal position, explain the choice

62. Receive at the teacher of an irrigogramma, the contrasting executed in various phases. Establish pictures on the negatoscope in the correct sequence, taking into account stages of carrying out an irrigoskopiya

63. Receive at the teacher pictures with radiological symptoms of cancer of gullet and a postburn stenosis of a gullet. Establish pictures on the negatoscope and carry out differential radiodiagnosis of good-quality and malignant defeats

64. From the images offered by the teacher, choose the roentgenogram with the hernia of esophageal department of a diaphragm (HEDD). Specify a contrasting phase, estimate position of a stomach. Write the protocol of research in the form of the connected text. Carry out differential diagnostics of GPOD with damage of a diaphragm followed by dislocation of bodies

65. From the images offered by the teacher, choose the roentgenogram of a gullet with an akhalaziya. Specify a contrasting phase, estimate distalny department of a gullet. Write the protocol of research in the form of the connected text

66. From the images offered by the teacher, choose the roentgenogram with stomach ulcer. Specify a contrasting phase, estimate depth and diameter of ulcer defect. Write the protocol of research in the form of the connected text

67. From the images offered by the teacher, choose the roentgenogram with an endofitny form of cancer of stomach. Specify a contrasting phase, estimate localization and extent of pathological process. Write the protocol of research in the form of the connected text

68. From the images offered by the teacher, choose the roentgenogram with an ekzofitny form of cancer of stomach. Specify a contrasting phase, estimate localization and extent of pathological process. Write the protocol of research in the form of the connected text

69. From the images offered by the teacher, choose irrigogramma corresponding to a divertikulyarny illness of a thick gut. Specify a contrasting phase, estimate localization, number and the sizes of diverticulums. Find among images of the roentgenogram corresponding to the complicated forms of a divertikulyarny illness of a thick gut. Write the protocol of research in the form of the connected text

70. Receive at the teacher of an urogramma. Correctly establish pictures on the negatoscope. Choose from presented urogramm a survey picture. Estimate a correctness of its performance. Define contours of lumbar muscles, situation, a form, contours of kidneys

71. Receive at the teacher of an urogramma. Correctly establish pictures on the negatoscope. Choose from presented urogramm a survey picture. Estimate situation and the sizes of kidneys

72. Receive at the teacher of an urogramma. Correctly establish pictures on the negatoscope. Choose from presented urogramm a survey picture. Estimate situation and the sizes of kidneys. Describe additional shadows in a projection of kidneys, mochetochnik or a bladder if those are visualized in the presented picture

73. Receive at the teacher of an urogramma. Correctly establish pictures on the negatoscope. Choose from presented urogramm the picture executed in an urografichesky phase of excretory urography. Estimate contours, localization and the sizes of kidneys. Characterize cup lokhanochnuyu system. Estimate visualization of mochetochnik

74. Receive an excretory urogramma at the teacher. Correctly establish a picture on the negatoscope. Define a contrasting phase. Characterize cup lokhanochnuyu system

75. Receive an excretory urogramma at the teacher. Correctly establish a picture on the negatoscope. Define a contrasting phase. Characterize shadows of mochetochnik

76. Receive an excretory urogramma at the teacher. Correctly establish a picture on the negatoscope. Define a contrasting phase. Characterize a bladder shadow

77. Receive at the teacher pictures on an occupation subject. Choose among them a retrograde tsistogramma. Estimate a bladder shadow

78. Receive at the teacher pictures on an occupation subject. Specify radiological signs of anomaly of kidneys on the submitted images

79. Receive at the teacher pictures on an occupation subject. Estimate relationship of high density additional shadows with a bladder shadow on the submitted images

80. Receive at the teacher a picture of bodies of a thorax with pheumothorax, estimate quality of the executed roentgenogram. Analyse a radiological picture, specify the leading radiological syndrome, define the provision of a sredosteniye and degree of a collapse of a lung. Write the protocol of research in the form of the connected text

81. Receive at the teacher a picture of bodies of a thorax with hydropheumothorax, estimate quality of the executed roentgenogram. On the basis of your knowledge, using differentsialno diagnostic signs correctly interpret a radiological picture and write the protocol of research in the form of the connected text

82. Receive the survey roentgenogram of abdominal organs executed in vertical position of the patient and in a lateropozition at the teacher. Estimate quality of the executed picture and specify anatomic objects which receive display in a picture normal

83. Receive the survey roentgenogram of abdominal organs and a survey urogramma at the teacher. Carry out the comparative analysis of these images (the performance purpose, laying of the patient, anatomic objects)

84. From the images offered by the teacher, choose the survey roentgenogram of abdominal organs with signs of perforation of hollow body. Write the protocol of research in the form of the connected text

85. From the images offered by the teacher, choose the survey roentgenogram of abdominal organs with signs of tonkokishechny impassability. Specify the possible reasons of development of mechanical tonkokishechny impassability. Write the protocol of research in the form of the connected text

86. From the images offered by the teacher with tonkokishechny impassability, choose the roentgenogram of an abdominal cavity with a passage of contrast substance. Call the purpose of performance of this research and sequence of its performance

87. From the images offered by the teacher, choose the survey roentgenogram of abdominal organs with signs of tolstokishechny impassability. Specify the possible reasons of development of mechanical tolstokishechny impassability. Write the protocol of research in the form of the connected text. Prove appointments to additional beam researches

**2. The used technical means**

For use of the working program for discipline "Radiodiagnosis" for the graduate of medical school in "Medical business" on the computer of the user the following equipment rooms and software are necessary:

1. Intel x86/AMD 64 personal computer
2. Random access memory – 1024 MV.
3. Free space on the hard drive of 640 MB.
4. The color SVGA monitor with resolution 600x800 and above.
5. OC Windows 2003

**3. Special conditions and requirements of organizational, technical and technological character**

At monitoring procedure of knowledge of discipline "Radiodiagnosis" the sets of the demonstration equipment and educational visual aids providing thematic illustrations are used. For carrying out classroom occupations various equipment is used.

**4. Conditions of transfer of documentation on development or conditions of its sale**

Estimated materials on discipline "Radiodiagnosis" for trained in the direction of specialty 31.05.01 Medical case is transferred by a group of authors on demand on a grant basis at obligatory copyright compliance. No part of materials can be reproduced in any form without written permission of owners of copyright.

# ADVERTISING AND TECHNICAL DESCRIPTION "Situational Tasks of Discipline "Radiodiagnosis" (the Direction 31.05.01 — Medical Business, a Profile — a Bachelor Degree)"

*Lezhnev D.A., Egorova E.A., Ivanova I.V., Makarova D.V.*

***UDC*** *615.849*
***GRNTI*** *14.35.07, 76.29.00*

**1. Functional purpose of a product, scope, its restrictions**

Situational tasks of discipline "Radiodiagnosis" are made on the basis of requirements of the Federal state educational standard of the higher education to a minimum of contents and level of preparation for trained in the direction of preparation (specialty) 31.05.01 Medical case. Situational tasks are presented in the passport of fund of estimated means which is the annex to the working program of discipline "Radiodiagnosis". In the course of development of the program of discipline the following problems are solved: 1) training of students in theoretical knowledge of opportunities of modern methods of radiodiagnosis; 2) training of students in the correct formulation of indications to beam inspection of patients with justification of those tasks which in the course of inspection the radiologist has to solve; 3) training of students in skills of an assessment of roentgenograms, receiving visual idea of the morphological and functional changes in body characteristic of various pathological processes. Process of studying of discipline "Radiodiagnosis" is directed to formation at the trained following professional competences (PC):

PK-1 – ability and readiness for implementation of a complex of the actions directed to preservation and promotion of health and including formation of a healthy lifestyle, the prevention of emergence and (or) distribution of diseases, their early diagnostics, identification of the reasons and conditions of their emergence and development, and also directed to elimination of an adverse effect on health of the person of factors of the environment of his dwelling;

PK-5 – readiness for collecting and the analysis of complaints of the patient, the yielded his anamnesis, results of survey, laboratory, tool, pathoanatomical and other researches for recognition of a state or establishment of the fact of existence or absence of a disease;

PK-6 – ability to definition at the patient of the main pathological states, symptoms, syndromes of diseases, nosological forms according to the International statistical classification of the diseases and problems connected with health, the X revision;

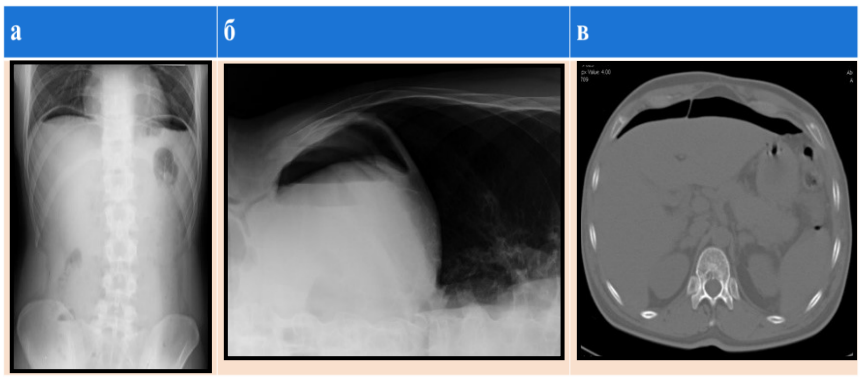
PK-8 – ability to definition of tactics of maintaining patients with various nosological forms;

PK-11 – readiness for participation in rendering an emergency medical service at the states demanding urgent medical intervention.

Situational tasks are made in volume of 20 tasks and intended for performance on a practical training and for independent out-of-class work. Tasks are divided into 6 sections: radiodiagnosis of medical emergencies, radiodiagnosis of diseases of bodies of a thorax, radiodiagnosis of abdominal organs, radiodiagnosis of bone and articulate system and radiodiagnosis in urology. Each task consists of the basic data including: complaints, results of survey, laboratory methods of research which need to be analysed at the first stage of the decision. Taking into account basic data to tasks the beam images showing various pathological processes of bodies and systems are picked up. Tasks are followed by five thematic tasks when which performing it is necessary to reflect the purpose of a method (technique), the principles of beam inspection, diagnostic opportunities of a method (technique), to specify beam semiotics signs of pathological process, to make the conclusion on the basis of basic data and the submitted images.

Task 1.

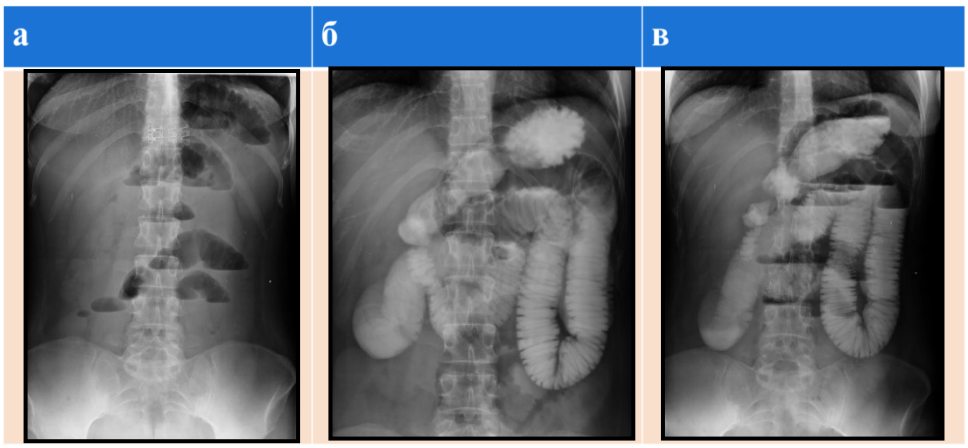
The patient is 45 years old, came with complaints to dagger pains to epigastriya. Objectively: integuments are pale, cold sweat, pulse is speeded up (102 beats/min), a doskoobrazny stomach.




Questions:

1. Call a technique (a) and a research objective.
2. Describe a radiological picture (a).
3. Technique of research (b), radiological symptoms of pathological process.
4. Method of research (v) and anatomic area of research.
5. Characterize the revealed changes (in).

Task 2.



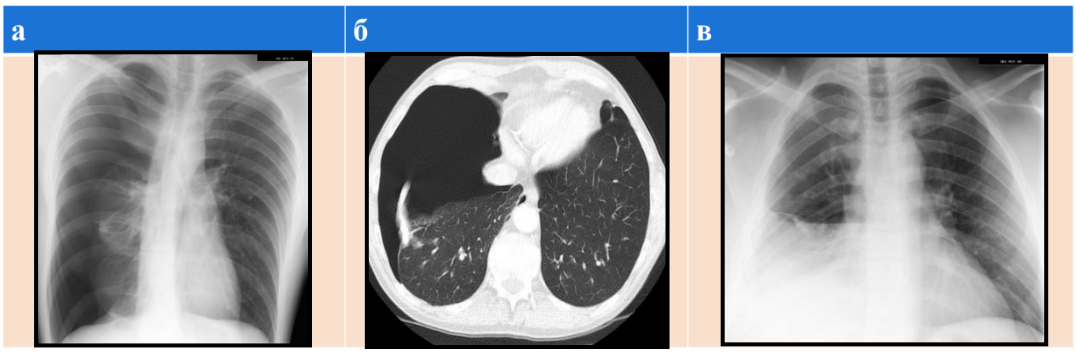

The patient of 60 years, with complaints to severe skhvatkoobrazny belly-aches within a day, vomiting came to an accident ward.

Questions:

1. Call a technique of research (a) and describe a radiological picture.
2. Call the possible reasons of development of this pathological process.
3. Call a technique (c) and a research objective.
4. Describe results of radiological research (c).
5. List the contrast substances used at research gastrointestinal tract.

Task 3.

The patient is 18 years old, arrived with complaints to short wind, pains in the right half of a thorax.



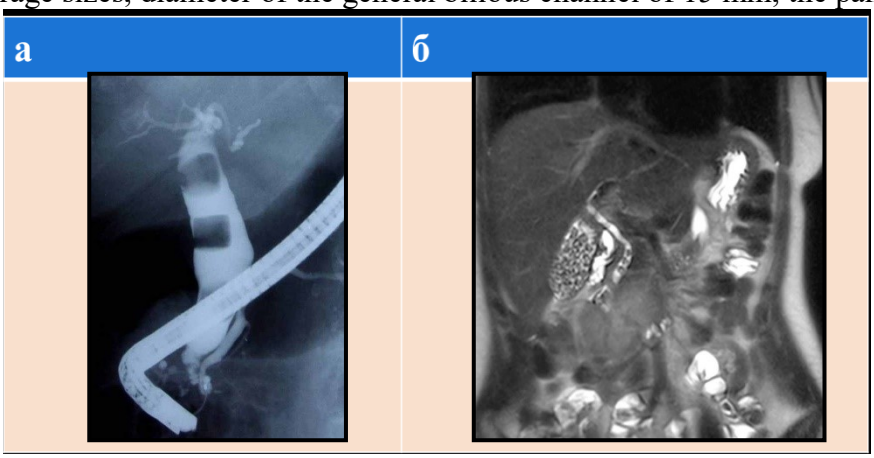

Objectively: integuments are pale, the right side of a thorax lags behind in the act of breath, at percussion – a box sound, at an auskultation – breath is not listened.

Questions:

1. Call a method and a technique of research (a).
2. Describe a radiological picture (a).
3. Method of research (b) and anatomic area of research.
4. Characterize the revealed changes (in).
5. Draw the conclusion taking into account the revealed changes (in).

Task 4.

The patient is 75 years old, complaints to pain in the right podreberye, yellowness of integuments. Considers himself as the patient 3 days. In the anamnesis chronic kalkulezny cholecystitis, blood bilirubin: the general – 275 mmol/l, a straight line – 180 mmol/l, indirect – 95 mmol/l. At ultrasonography – diffusion changes of a liver, a gall bladder contains stones of the average sizes, diameter of the general bilious channel of 15 mm, the pancreas is not changed.

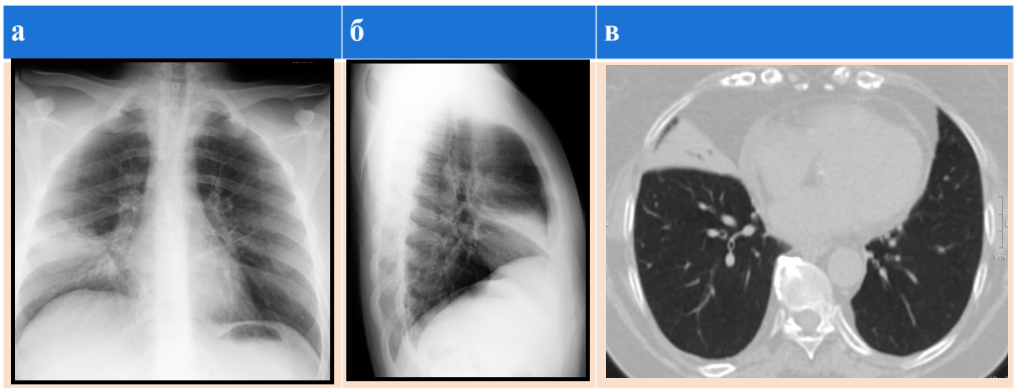



Questions:

1. Call a method of research (a).
2. Specify radiological signs of pathological process (and).
3. Method of research (b) and anatomic area of research.
4. (Would) list signs of pathological process.
5. Call absolute contraindications to performance to research (b).

Task 5.

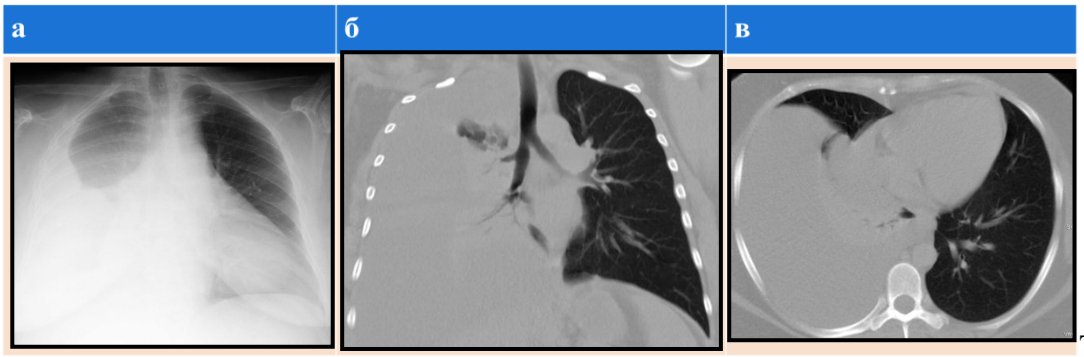
The patient of 32 years, arrived with complaints to cough, pains in the right side at breath, a fever, temperature increase to 39 0C, short wind. Ached the day before, after overcooling. Objectively: at percussion on the right obtusion of a perkutorny sound, bronchial breath, the strengthened bronkhofoniya in front is lower than IV edges.




Questions:

1. Call a method and a technique of research (and, b).
2. Estimate quality of the executed roentgenogram (and).
3. Specify share and segmentary localization of pathological process (and, b).
4. Characterize the revealed changes and draw the conclusion (and, b).
5. Specify a method of research and a projection of the image (in).

Task 6.

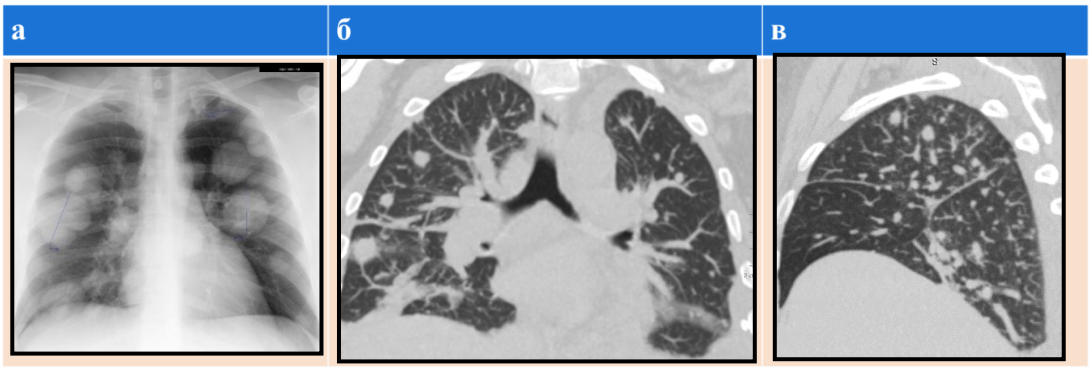



The patient of 67 years had a transmuralny myocardial infarction a year ago. There are no pains behind a breast, but for the last 2 months paid attention to emergence of feeling of shortage of air when walking. Objectively: ChDD 22 in a minute, akrotsianoz, at an auskultation – on the right below a shovel corner breath is sharply weakened, at percussion – a stupid pulmonary sound, at a palpation of a stomach the gepatomegaliya is revealed. Hypostases of legs in the area a foot.

Questions:

1. Call a method and a technique of research (a).
2. Estimate quality of the executed roentgenogram (and).
3. Characterize the revealed changes and draw the conclusion (and).
4. Specify a method of research and a projection of images (c).
5. Define the leading radiological symptom of pathological process (c).

Task 7.




The patient of 55 years, at ultrasonic research is revealed a malignant tumor of a kidney with an invasion of an adrenal gland, paranefralny cellulose and a renal artery. It is directed to an

additional examination for the purpose of the solution of a question of further expeditious treatment.

Questions:

1. Call a method and a technique of research (a).
2. Estimate quality of the executed roentgenogram (and).
3. Characterize the revealed changes and draw the conclusion (and).
4. Specify a method of research and call projections of images (c).
5. Define the leading radiological symptom of pathological process (c).

Task 8.

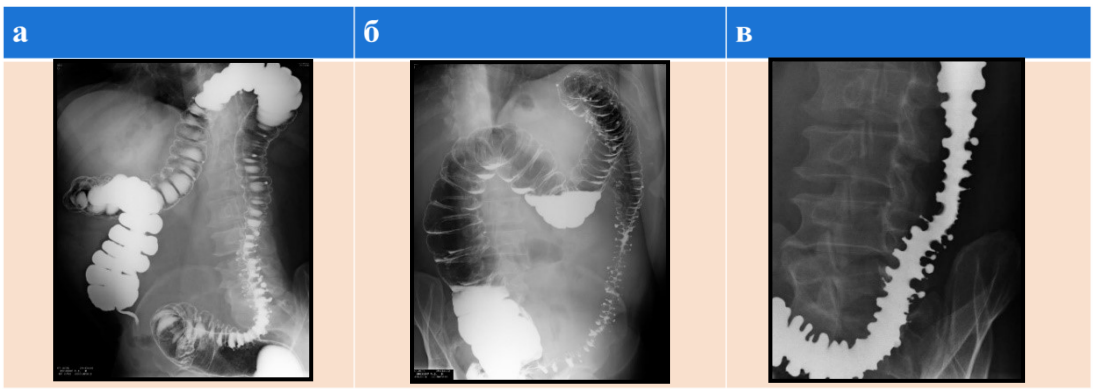
To the patient research of abdominal organs and zabryushinny space with intravenous contrasting is executed.

Questions:

1. Call a research method (and, c).
2. List the anatomic educations designated by figure 1, 2, 3, 4, 5 (a).
3. Call contrasting phases (c).
4. Specify the contrast substances used when carrying out research (c).
5. List possible complications when carrying out research with intravenous contrasting.

Task 9.

The patient of 65 years, shows complaints to regularly arising pains in the left podvzdoshny area disappearing after the act of a defekation, an abdominal distension.

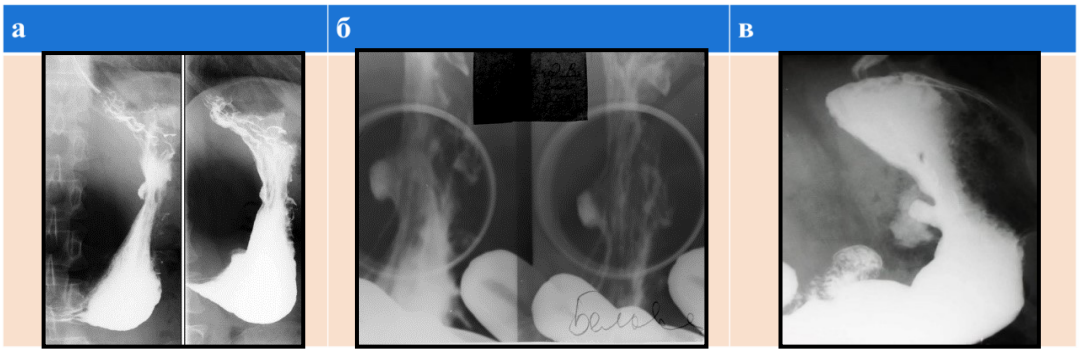



Questions:

1. Call a method and a technique of research (and, c).
2. Consistently list stages of performance of this technique of research.
3. Characterize the revealed changes (and, c) also draw the conclusion.
4. Specify the contrast substances used when carrying out research (and, c).
5. List possible complications of this pathological process.

Task 10.

The patient of 43 years a long time having stomach ulcer of a stomach arrived with a clinical picture of an aggravation.

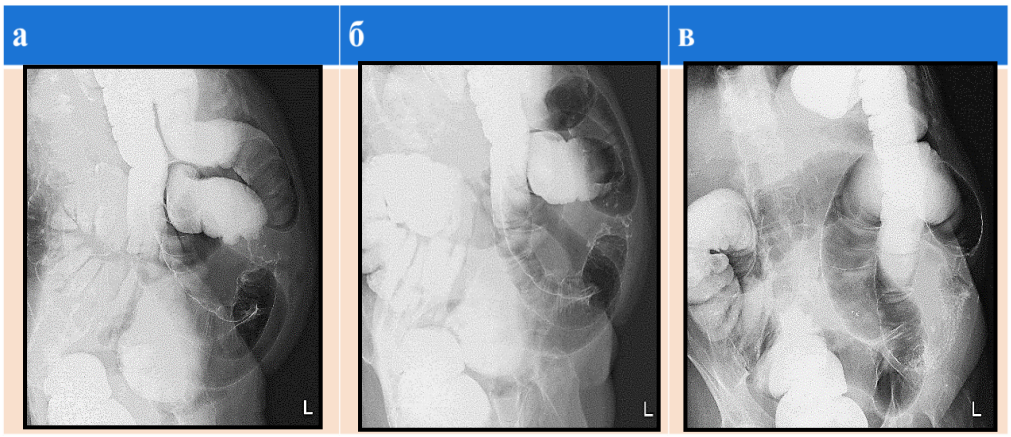



Questions:

1. Call a method and a technique of research (and, c).
2. Characterize the revealed changes (and, b) also draw the conclusion.
3. Call complications of this pathological process.
4. Characterize the revealed changes (in).
5. Specify the contrast substances used when carrying out research (and, c).

Task 11.

At the patient of 72 years with IBS, at inspection metastatic damage of a liver is revealed. In the anamnesis a uterus extirpation concerning a fibromioma and a stomach resection in connection with a perforative gastroduodenal ulcer. At survey in a mezogastriya – huge ventral hernia. Obesity of the III degree.

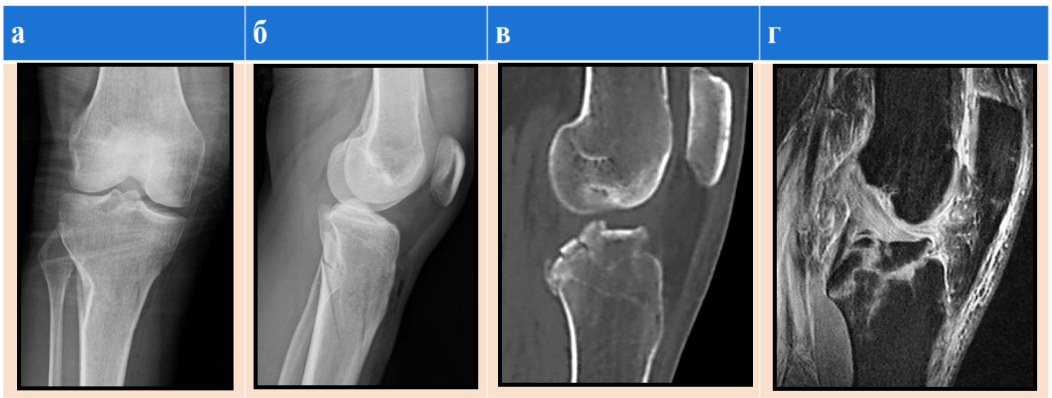



Questions:

1. Call a method and a technique of research (and, c).
2. Characterize the revealed changes (and, c) also draw the conclusion.
3. Call stages of performance of this research.
4. Tell about training of the patient for this research
5. Specify the contrast substances used when carrying out research (and, c).

Task 12.

Patient of 45 years. Complaints to sharp pain and impossibility of movements in the left knee joint after falling from the bicycle.

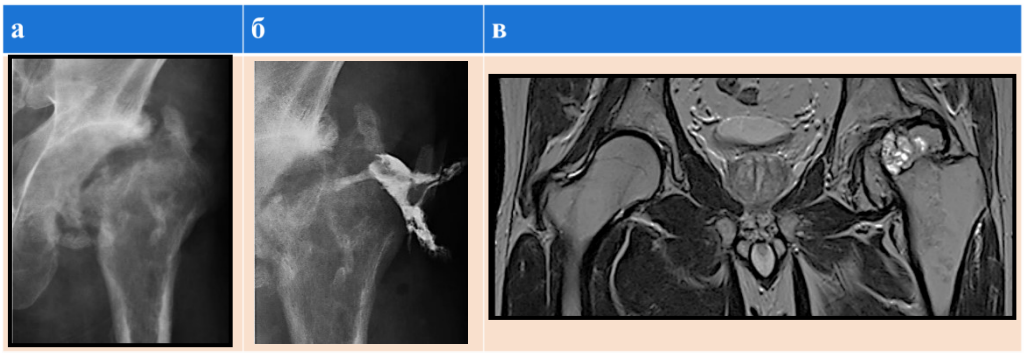



Questions:

1. Describe X-ray anatomy of a knee joint (and, b).
2. Specify radiological signs of traumatic changes of bones (and, b).
3. Call a method (v) and a research objective of the left knee joint.
4. Call a method (g) and a research objective of the left knee joint.
5. Define nature of changes of a knee joint and tibial bones (and, in, d).

Task 13.

Patient of 62 years. In the anamnesis an open fracture of a neck of the left femur. Complaints to pain in the left coxofemoral joint, purulent separated from fistula at the level of a big spit.

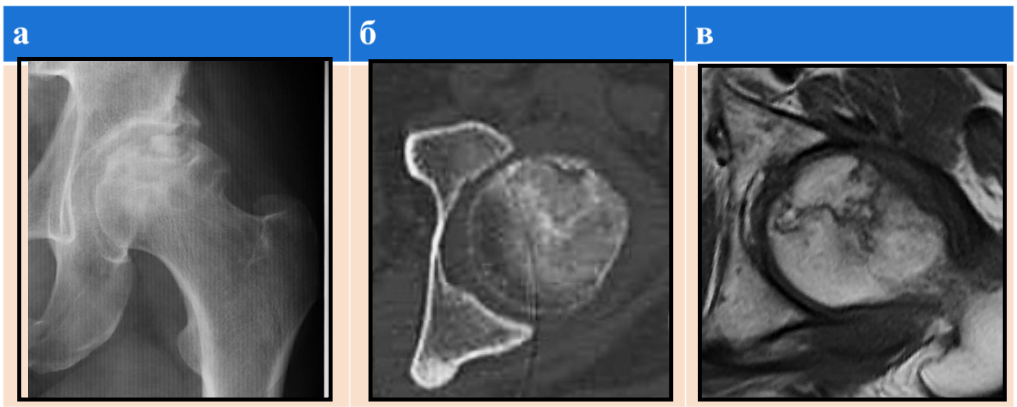



Questions:

1. Describe a radiological picture of changes of the left coxofemoral joint (and).
2. Call a technique (b) and a research objective of the left coxofemoral joint.
3. Describe results of research (b) of the left coxofemoral joint.
4. Call a method (v) and a research objective of coxofemoral joints.
5. Define nature of changes of the left coxofemoral joint (and, c).

Task 14.

Patient of 68 years. Within 1,5 years shows complaints to constant pain, reduction of volume of movements in the left coxofemoral joint.

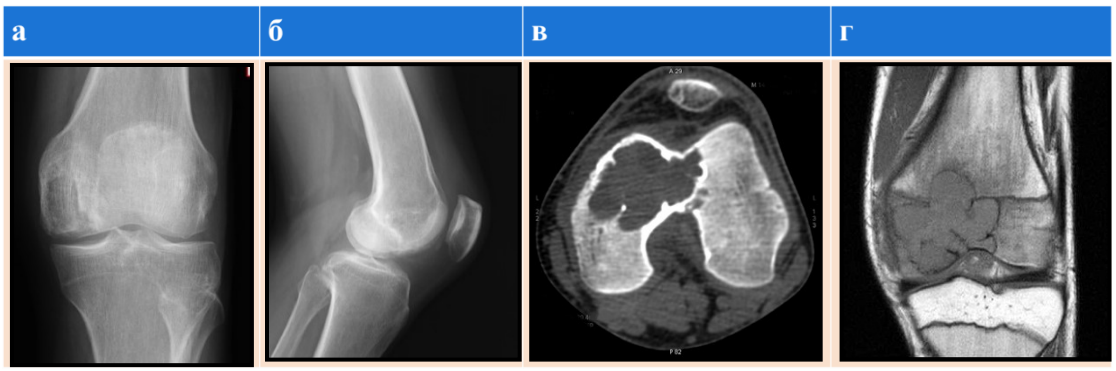



Questions:

1. Describe X-ray anatomy of a coxofemoral joint (and).

2. Define nature of structural changes of a head of the left femur (and).
3. Call a method (b) and a research objective of the left coxofemoral joint.
4. Call a method (v) and a research objective of the left coxofemoral joint.
5. According to beam methods specify the reason of pain and restriction of movements in a joint.

Task 15.



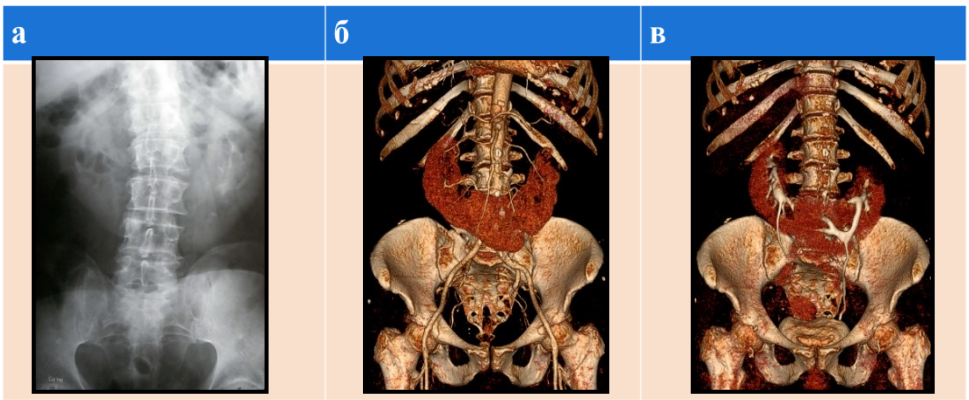

Patient of 23 years. The complaint to suddenly arisen left knee joint pain which has constant character is not stopped by analgetics.

Questions:

1. Describe a radiological picture of changes of the left knee joint (and, b).
2. Call a method (v) and a research objective of the left knee joint.
3. Call a method (g) and a research objective of the left knee joint.
4. Specify advantages of tomographic methods (in, d) in identification of volume processes in a bone.
5. Define nature of changes of the left knee joint (and, in, d).

Task 16.

Patient 23 years. In the anamnesis chronic colitis. Complaints to the nagging pains mainly in lumbar area arising as a rule after physical activity at inclinations and extension of a trunk.

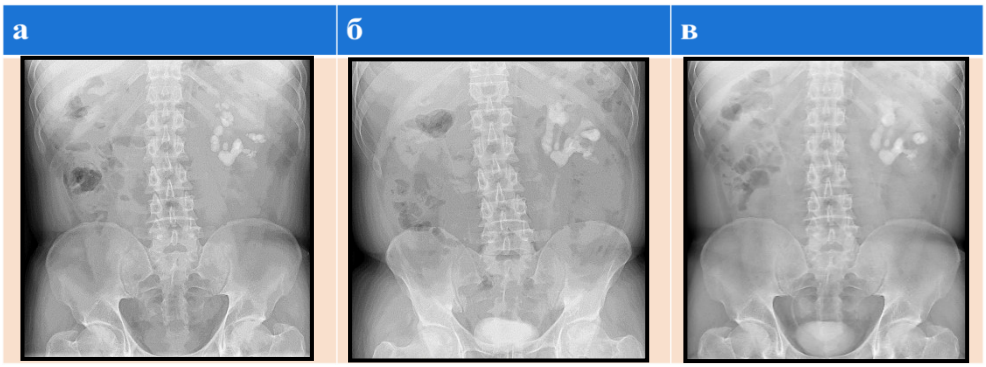



Questions:

1. Call a method and a technique of research (a), give X-ray anatomic orientation.
2. Estimate training of the patient for research and correctness of performance of a picture (and).
3. Define nature of the changes revealed during research (a).
4. Call a research method (c).
5. Estimate the additional data received as a result of research (c).

Task 17.

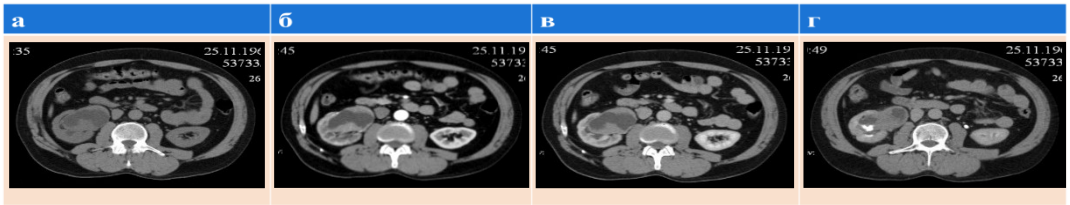
Patient of 49 years. The complaint to intensive pains in lumbar area, it is more at the left. By results of the general analysis of urine oxalates, mikrogematuriya signs were revealed.




Questions:

1. Call a method and a technique of research (a).
2. Estimate coverage of the roentgenogram and describe the revealed changes (and).
3. Call a method and a technique of research (c), define contrasting phases.
4. Estimate contours, situation, the sizes of kidneys and cup lokhanochny a complex (and - in).
5. Select the image (and - in) allowing to estimate a bladder condition.

Task 18.

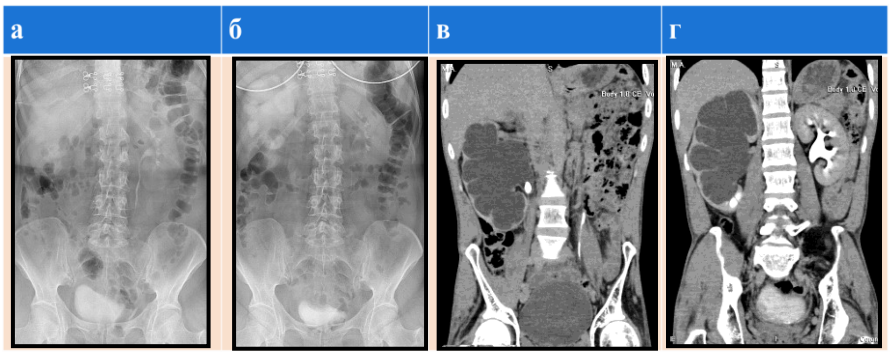



Patient of 46 years. In the anamnesis an arterial hypertension. According to the patient increase HELL arise suddenly, are badly stopped by hypotensive preparations. In the last days complaints to the speeded-up urination, a makrogematuriya, dull aches in lumbar area appeared, it is more on the right, amplifying at physical activity and at the use of large volumes of liquid (more than 250 ml at a time). According to the general analysis of urine – macro-and a mikrogematuriya, single oxalates under review.

Questions:

1. Call a method and a technique of research (and, b).
2. Define the anatomic educations designated by figures (b).
3. Characterize shadows of both kidneys, cup lokhanochnuyu system, mochetochnik (and, b).
4. Call a research method (in, d).
5. Estimate data on the pathological changes received in addition as a result of research (in, d).

Task 19.



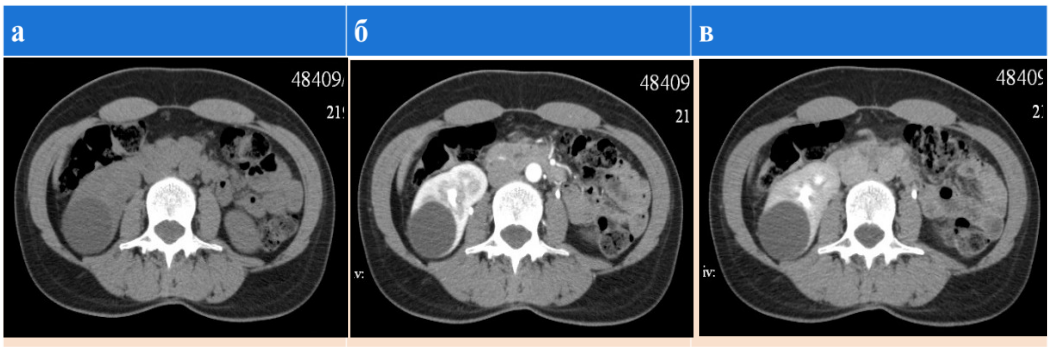

Patient of 45 years. Notes existence of a makrogematuriya for the last 2 days. In the anamnesis the incidental increases HELL which are badly giving in to correction by hypotensive preparations. According to the general blood test – eritrotsitoz.

Questions:

1. Call a research method (and-).
2. Specify anatomic educations, designate in figures (b).
3. Define contrasting phases (-) and prove the answer.
4. Define nature of the revealed changes (and, in, d).
5. Specify advantages of this research (and-) in comparison with excretory urography.

Task 20.

Patient of 56 years. In the anamnesis a nefrektomiya at the left. Complaints to headaches and periodically arising aching pains in a waist on the right. Within the last 1,5 years notes increase of arterial pressure in the afternoon.




Questions:

1. Call a method and anatomic area of research (and-).
2. Define contrasting phases (c) also prove the answer.
3. Define nature of the changes revealed during research (and - in).
4. Specify advantages of a technique with contrasting (d) in identification of volume processes of an urinary system.
5. Call contraindications to performance of research with intravenous contrasting (c).

**2. The used technical means**

For use of situational tasks of discipline "Radiodiagnosis" for the graduate of medical school in "Medical business" on the computer of the user the following equipment rooms and software are necessary:

1. Intel x86/AMD 64 personal computer
2. Random access memory – 1024 MV.
3. Free space on the hard drive of 640 MB.
4. The color SVGA monitor with resolution 600x800 and above.
5. OC Windows 2003

**3. Special conditions and requirements of organizational, technical and technological character**

For improvement of quality of preparation and an assessment of the received competences performance of situational tasks is carried out with use of the software: a package of the Microsoft Office application programs and information help systems of department of innovations and intellectual property of MGMSU of A.I. Evdokimov.

**4. Conditions of transfer of documentation on development or conditions of its sale**

Situational tasks of discipline "Radiodiagnosis" for trained in the direction of specialty 31.05.01 Medical case" is submitted by a group of authors on demand on a grant basis at obligatory copyright compliance. No part of materials can be reproduced in any form without written permission of owners of copyright.

# ADVERTISING AND TECHNICAL DESCRIPTION "The Working Program for Discipline "Radiodiagnosis" (the Direction 31.05.01 — Medical Business, a Profile — a Bachelor Degree)"

*Lezhnev D.A., Popov N.V., Ivanova I.V., Makarova D.V.*

***UDC** 615.849*
***GRNTI** 14.35.07, 76.29.00*

1. **Functional purpose of a product, scope, its restrictions**

The working program for discipline "Radiodiagnosis" is made on the basis of requirements of the Federal state educational standard of the higher education to a minimum of contents and level of preparation for trained in the direction of preparation (specialty) 31.05.01 Medical case. "Radiodiagnosis" is the purpose of studying of discipline: to develop the correct idea of opportunities of beam methods of research at the student and to teach to form the most effective tactics of beam inspection of patients with various pathology taking into account further training and professional activity. Problems of discipline: 1) training of students in theoretical knowledge of opportunities of modern methods of radiodiagnosis; 2) training of students in the correct formulation of indications to beam inspection of patients with justification of those tasks which in the course of inspection the radiologist has to solve; 3) training of students in skills of an assessment of roentgenograms, receiving visual idea of the morphological and functional changes in body characteristic of various pathological processes. Process of studying of discipline "Radiodiagnosis" is directed to formation at the trained following professional competences (PC):

PK-1 – ability and readiness for implementation of a complex of the actions directed to preservation and promotion of health and including formation of a healthy lifestyle, the prevention of emergence and (or) distribution of diseases, their early diagnostics, identification of the reasons and conditions of their emergence and development, and also directed to elimination of an adverse effect on health of the person of factors of the environment of his dwelling;

PK-5 – readiness for collecting and the analysis of complaints of the patient, the yielded his anamnesis, results of survey, laboratory, tool, pathoanatomical and other researches for recognition of a state or establishment of the fact of existence or absence of a disease;

PK-6 – ability to definition at the patient of the main pathological states, symptoms, syndromes of diseases, nosological forms according to the International statistical classification of the diseases and problems connected with health, the X revision;

PK-8 – ability to definition of tactics of maintaining patients with various nosological forms;

PK-11 – readiness for participation in rendering an emergency medical service at the states demanding urgent medical intervention.

As a result of studying of discipline trained acquires knowledge, abilities, possession and experiment on each competence.

Table 1. Results of training

| | Competence code | Results of training |
|---|---|---|
| | PK-1 | Nobility:<br>- methods of obtaining the images applied in radiodiagnosis (radiological, ultrasonic, radio nuclide, magnetic and resonant, thermographic), their merits and demerits<br>To be able:<br>- to reasonably choose the most informative methods and techniques of radiodiagnosis for research of the patient<br>To own: |

| | Competence code | Results of training |
|---|---|---|
| | | - by methods of the analysis of results of beam inspection<br>To gain experience:<br>- to independently distinguish main types of images with the indication of object of research |
| | PK-5 | Nobility:<br>– possibilities of methods of beam research of various bodies and systems<br>To be able:<br>– to define the main indications and contraindications to beam research of bodies and systems<br>To own:<br>– an assessment of images of bodies and anatomic educations according to various methods of beam research<br>To gain experience:<br>- algorithm of statement of the preliminary diagnosis with the subsequent direction of the patient to the corresponding specialist doctor |
| | PK-6 | Nobility:<br>– possibilities of methods of beam research in diagnostics pathological conditions of bodies and systems<br>To be able:<br>– to carry out syndromic diagnostics of the revealed changes on the basis of algorithm of diagnostic search<br>To own:<br>– the full analysis of beam images with the formulation of the conclusion<br>To gain experience:<br>- to define stages of beam inspection and sequence of performance of methods and techniques |
| | PK-8 | Nobility:<br>– algorithm of diagnostic search taking into account a clinical picture<br>To be able:<br>– to reveal an aberration, to define character and volume of defeat of bodies and systems<br>To own:<br>– bases of interpretation of results of beam inspection<br>To gain experience:<br>- to carry out the analysis of roentgenograms and to formulate the conclusion |
| | PK-11 | Nobility:<br>– the most informative methods and techniques of beam inspection with obtaining the maximum information at the minimum financial and time expenditure<br>To be able:<br>– to make the optimum plan (algorithm, the scheme) of beam inspection taking into account specificity, sensitivity and the accuracy of methods<br>To own:<br>– basic level of carrying out the main stages of beam inspection<br>To gain experience:<br>- to independently distinguish the major medical emergencies according to radiological inspection |

Studying of discipline is based on the knowledge and abilities received trained earlier as a result of development of the previous parts of an educational program which are necessary at development of this discipline: Latin, anatomy, history of medicine, physicist, hygiene,

pathological physiology, propaedeutics of internal diseases, general surgery. Studying of discipline is basic for the subsequent development of disciplines (modules), the practician: phthisiology, faculty surgery, faculty therapy, urology, traumatology and orthopedics, oncology, hospital surgery, hospital therapy, polyclinic therapy.

The discipline is studied on the 4th course, in the 7th semester. The general labor input of discipline makes 4 test units, of 144 class periods. Labor input of discipline consists of classroom occupations (72 class periods) and independent work trained (18 class periods). Classroom classes are given in the form of lectures and a practical training.

Table 2. Contents of sections of discipline

| section No. | Section of discipline (module) | Name of subjects of the section and their contents | General labor input, academician hour. | from them: classroom occupations | | | Independent work |
|---|---|---|---|---|---|---|---|
| | | | | Lectures | Practical training | Laboratory works | |
| | Methods and techniques of radiodiagnosis | Methods of obtaining medical diagnostic images. History of development of a radiology. Nature and properties of H-beams. Device of a x-ray tube. Skialogichesky (shadow) features of the radiological image. Computer Tomography (CT). Indications and contraindications to performance of KT. Physics and technology bases of the magnetic and resonant tomography (MRT). Absolute and relative contraindications to research. Physical bases of a method of ultrasonic diagnostics. Concept about an ekhogennost. Bases of a medical termografiya | 8 | 2 | 5 | - | 1 |
| | The contrast means used in radiodiagnosis. Radiation safety | Classification of the contrast means used in radiodiagnosis. Collateral reactions to introduction of contrast substances. Principles of radiation safety: rationing, justifications, optimization. Concept about an effective dose. Means of radiation protection | 6 | | 5 | - | 1 |
| | Normal X-ray anatomy of bodies of a thorax | Criteria for evaluation of quality of the roentgenogram in direct and lateral projections, concept about summatsionny effect. Share, zone and segmentary structure of lungs. Pulmonary background and pulmonary drawing. Intra pulmonary part of a root of a lung, objective criteria for evaluation of a root of a lung. A cardiovascular shadow in the x-ray image. Classification of departments of a sredosteniye. Soft tissues and bone structures of bodies of a thorax in the radiological image. | 9 | 2 | 5 | - | 2 |
| | X-ray semiotics of | Symptom of blackout and enlightenment of a pulmonary background. Intra pulmonary and | 7 | | 5 | - | 2 |

| section No. | Section of discipline (module) | Name of subjects of the section and their contents | General labor input, academician hour. | from them: | | | |
|---|---|---|---|---|---|---|---|
| | | | | classroom occupations | | | Independent work |
| | | | | Lectures | Practical training | Laboratory works | |
| | diseases of bodies of a thorax | extra pulmonary localization of pathological process. Radiological syndromes of diseases of bodies of a thorax: total and limited blackout, spherical shadow, air cavity, dissemination, change of a root of easy and pulmonary drawing | | | | | |
| | Differential radiodiagnosis at diseases of bodies of a thorax | X-ray diagnostic symptoms of pneumonia, infiltration of pulmonary fabric in the radiological image, types of an infiltration of pulmonary fabric at pneumonia. Central and peripheral cancer of a lung, atelektaz lung, share, segment. Metastatic damage of lungs. Radiological signs of a gidrotoraks. Analysis of changes and registration of the protocol of radiological research | 8 | 2 | 5 | - | 1 |
| | X-ray semiotics of pathological changes of bone and articulate system | X-ray semiotics symptoms of diseases of bone and articulate system: destruction, osteoporosis, osteonecrosis, osteoliz, osteosclerosis, swelling. Types of periostalny reaction. Radiological image and analysis of joints: x-ray articulate crack, switching bone plates, paraarticulary soft fabrics | 9 | 2 | 5 | - | 2 |
| | X-ray semiotics at mechanical damages of the musculoskeletal device and osteomyelitis | Classification of changes, radiodiagnosis. Semiotics signs of a false joint, post-traumatic osteomyelitis, excess bone callosity. Classification by an etiologichesky symptom of osteomyelitis. Radiological symptoms of sharp, subsharp and chronic osteomyelitis. | 7 | | 5 | - | 2 |
| | Radiodiagnosis of volume formations of bone and articulate system | Classification of tumors and opukholepodobny diseases. Radiological symptoms of benign and malignant tumors. X-ray semiotics symptoms of the most often met bone tumors, value in differential diagnostics of localization of pathological process and age of the patient | 7 | | 5 | - | 2 |
| | Normal X-ray anatomy and X-ray semiotics of diseases of a digestive | Rules of implementation of the survey roentgenogram of abdominal organs. Artificial contrasting. Phases of contrasting and their value in studying of structure and function of body. Technique of research and normal X-ray anatomy of a gullet. | 9 | 2 | 5 | - | 2 |

| section No. | Section of discipline (module) | Name of subjects of the section and their contents | General labor input, academician hour. | from them: classroom occupations | | | Independent work |
|---|---|---|---|---|---|---|---|
| | | | | Lectures | Practical training | Laboratory works | |
| | tract | Techniques of research and normal X-ray anatomy of a stomach. Techniques of research and normal X-ray anatomy of a thick gut. Indications to an irrigoskopiya. Radiological syndromes of diseases of bodies of a digestive tract | | | | | |
| | Recording of results of radiological research at digestive tract diseases | General principles of differential diagnostics of good-quality and malignant defeats of bodies of a digestive tract. Radiodiagnosis of hernias of esophageal department of a diaphragm. Gullet diverticulums. Dysfunction of a gullet: akhalaziya, cardiospasm, insufficiency of kardialny department of a stomach. Radiological symptoms of stomach ulcer. Radiological symptoms of cancer of stomach depending on a form of growth of a tumor (ekzo-endofitny, mixed). Divertikulez of a thick gut. Complications of a divertikulyarny illness. Analysis of changes and registration of the protocol of radiological research | 6 | | 5 | - | 1 |
| | Techniques of research of an urinary system | Value of radiological techniques in studying of an urinary system. Analysis of a survey urogramma. Rules of performance and stages of excretory urography. Mochetochniki in the radiological image. Assessment of a condition of a bladder. Congenital violations of development of uric bodies. Radiological signs of a gidronefroz, gidrokalikoz, gidroureter and gidroureteronefroz. Analysis urogramm and registration of the protocol of radiological research | 6 | | 5 | - | 1 |
| | Algorithm of beam inspection at medical emergencies | Classification and radiodiagnosis of intestinal impassability. Radiological signs of perforation of hollow body. Radiological symptoms of pheumothorax. Analysis of changes and registration of the protocol of radiological research | 8 | 2 | 5 | - | 1 |
| | Examination | | 54 | | | | |
| | Total: | | 144 | 12 | 60 | - | 18 |

When studying discipline the following forms of control of study of trained are used: testing, interview, poll, solution of situational tasks, performance of practical tasks.

Intermediate certification for discipline is carried out in the form of examination. Examination consists of two stages: estimates of practical abilities of the student and interview. Stages of examination are carried out upon termination of studying of discipline in the period of examinations. Interview takes place on the basis of control questions which are formed in tickets.

Table 3. Estimation of knowledge

| Assessment | Evaluation criteria |
|---|---|
| It's cool! | It is "perfectly" exposed trained, shown full and profound knowledge of the program of discipline, ability to their systematization and clinical thinking, and also ability to apply the acquired knowledge in a standard and unusual situation |
| Well | It is "well" exposed trained, shown good/serious knowledge of the program of discipline, capable to apply the acquired knowledge in a standard situation, but not reached abilities to their systematization and clinical thinking, and also to their application in an unusual situation |
| Well | It is "well" exposed trained, shown weak knowledge, but owning the main sections of the program of discipline, a necessary minimum of knowledge and capable to apply them on a sample in a standard situation |
| Unsatisfactorily | It is "unsatisfactorily" exposed trained, shown superficial knowledge that does not allow it to apply the acquired knowledge even on a sample in a standard situation |

Practical preparation is estimated according to the content of discipline (module) and practical ability are exposed taking into account activity trained on classroom occupations, qualitatively performed tasks. Practical preparation is carried out on occupations on bases of MGMSU department of A.I. Evdokimov.

Table 2. Estimation of practical ability

| Assessment | Evaluation criteria |
|---|---|
| It's cool! | It is "perfectly" exposed trained, able to state logically correctly and consistently the answer to questions, faultlessly owning terminology in "Radiodiagnosis", able to show freely beam methods of research and anatomic educations on roentgenograms, capable to do generalizations and conclusions, to solve situational problems, shown understanding in indications to use of beam methods in clinical medicine |
| Well | It is "well" exposed trained, able to state logically correctly and consistently the answer to questions, faultlessly owning terminology in "Radiodiagnosis", able to show freely beam methods of research and anatomic educations on roentgenograms, capable to do generalizations and conclusions, to solve situational problems, shown understanding in indications to use of beam methods in clinical medicine, *but made* in the answer of an error and insignificant mistakes, inexact expressions, some inaccuracies in terminology, inconsistency and irrational receptions in the analysis of beam images. |
| Well | It is "well" exposed trained, *acquired* the main volume of knowledge within the educational standard allowing to continue study (total control – examination), acquired contents of sections of discipline or a subject of occupation, well owning beam terminology, able to show on roentgenograms the structures of body, main, important for understanding, radiological educations, revealed ability in the answer to state the main thing, *but allowed* inconsistency and a fragmentariness in a statement of answers to questions, ignorance of definitions and essence of some concepts, shown difficulties in demonstration of anatomical |

| Assessment | Evaluation criteria |
|---|---|
| | structures and in creation of generalizations and conclusions |
| Unsatisfactorily | It is "unsatisfactorily" exposed trained, revealed a fragmentariness of knowledge within the educational standard, found gaps in knowledge or absence of knowledge of considerable part of material of the training program, making gross blunders in an answer statement, not owning radiological terminology, not able to show the major educations on roentgenograms that in total does not allow to continue training |

The information technologies used at implementation of educational process on discipline:

the situational tasks illustrated by beam images – for working off of skill of the analysis of beam images, allocation of the leading beam syndrome, the description of pictures in the form of the protocol, creation of algorithm of beam inspection;

tasks in the form of cases – the analysis of the situations based on base of keysovy tasks in which the main sources are clinical records, cards of patients, anamnesis fragments, beam images;

the thematic presentations with tasks prepared by teachers – the computer presentations with existence of detailed tasks for independent work of the student.

**2. The used technical means**

For use of the working program for discipline "Radiodiagnosis" for the graduate of medical school in "Medical business" on the computer of the user the following equipment rooms and software are necessary:

1. Intel x86/AMD 64 personal computer
2. Random access memory – 1024 MV.
3. Free space on the hard drive of 640 MB.
4. The color SVGA monitor with resolution 600x800 and above.
5. OC Windows 2003

3. Special conditions and requirements of organizational, technical and technological character

When carrying out occupations of lecture type the sets of the demonstration equipment and educational visual aids providing thematic illustrations are used. For carrying out classroom occupations various equipment is used.

4. Conditions of transfer of documentation on development or conditions of its sale

The materials "The Working Program for Discipline "Radiodiagnosis" for Trained in the Direction of Specialty 31.05.01 Medical Case" are transferred by a group of authors on demand on a grant basis at obligatory copyright compliance. No part of the working program can be reproduced in any form without written permission of owners of copyright

## We read to ADVERTISING AND TECHNICAL DESCRIPTION "Mass open online course "The Russian classics together. M. Bulgakov "Master and Margarita"

*Federal public autonomous educational institution of the higher education "National research Tomsk state university"*
*Bankova T.B., YUrina E.A.*

***UDC** 378, 304, 316.6*
***GRNTI** 14.35.07, 14.35.01, 14.25.07, 14.33.07, 17.82.31*

**1. Functional purpose of a product, area of its application, its appointment**

About a format of representation of a course "We read the Russian classics together. M. Bulgakov "Master and Margarita"

Course "We give the Russian classics together. M. Bulgakov "Master and Margarita" is presented in the MOOK popular format. MOOK are the mass open online courses (English – Massive Open Online Course, MOOC) which are based on granting the academic courses from the leading world universities to any person in any corner of the globe by means of remote technologies with observance of accurate terms of delivery of intermediate and final test tasks and a possibility of the organization of free communication between teachers and listeners of a course.

Key features of MOOK are connected with realization of the principles of a continuity and individualization of education, with the solution of a problem of promoting of the modern scientific ideas "packed" into a form, available to understanding:

1. mass character which consists in limitlessness of number of listeners of a course and orientation to wide audience for which it is necessary "simply to tell about difficult";

2. openness which gives the chance to everyone to gain knowledge free of charge, remotely, in convenient time and in the place, convenient for the listener;

3. integrity of the courses including not just fragments of a training material, but also practical tasks, a communicative component, test materials;

4. an opportunity to receive the certificate in case of successful development of a course.

About the maintenance of a course "We read the Russian classics together. M. Bulgakov "Master and Margarita"

Course "We give the Russian classics together. M. Bulgakov "Master and Margarita" is aimed at mastering in joint activity (teacher student) by universal stage-by-stage model of work with the art text which can be used as a basis for formation of skills of semantic reading a work of art. Similar skills are significant both in real communication, and in educational activity (in a native and foreign language). M. Bulgakov's work "Master and Margarita" chosen for formation of skills of semantic reading makes gold fund of world art culture.

In this course listeners will learn:

1. to analyze a work of art from the point of view of a communicative plan of the author;

2. to comment on the text from the point of view of the received communicative task;

3. to intepretirovat the art text, allocating the substantial and language units which are a basis of development of literary thought;

4. to predict contents of the text on the basis of the semantic analysis;

5. to design own statement;

6. to reflex concerning images, figurative means, a communicative plan of the writer;

7. to estimate own speech work created as result of a reflection concerning the text.

Requirements to the level of training of listeners:

knowledge of a basic course of the Russian literature in volume of high school (for the Russian participants);

knowledge of Russian at the A2-B1 level above (for foreign trained),

the read M. A. Bulgakov's novel "Master and Margarita" (for foreign trained perhaps reading in the native language).

The program of a course "We read the Russian classics together. M. Bulgakov "Master and Margarita"

<u>Module 1</u>

Subject 1. Introduction. Reading as creativity

1.1. Whether there is a harmful reading and that needs to be done not to become the reader with "mental jam"

1.2. What needs to be done to become the real reader?

Subject 2. "Poster" of the book: title, epigraph, genre

2.1. "The juggler with a hoof" and "The black magician" look for the decent place

2.2. What stopped the heavy choice of M. Bulgakov on the name "Master and Margarita"?

2. 3. - In what genre you write, kind? - Yes in all I try (From conversation of the writer and the publisher)

Test tasks to lectures 1.1, 1.2, 2.1, 2.3, the essay to lecture 2.2

Module 2

Subject 3. Author and his characters: polyphony of the art text

3.1. "Once" or beginning of strangenesses of terrible May evening

3.2. Strangenesses proceed...

Subject 4. Change of a foreshortening: alternation of subject lines

4.1. Third strangeness of hot May evening …

4.2. From Moscow to Ershalaim (Chapter 1-2)

4.3. Ershalaim (Chapter 2)

Test tasks to each of lectures of the module 2

Module 3

Subject 4. Change of a foreshortening: alternation of subject lines. Prodozheniye

4.1. From Ershalaim – to Moscow (Chapters 2 and 3)

4.2. "Schizophrenia, as well as it was told" and "The bad apartment"

Subject 5. Facts and details: in search of key sense

5.1. Pendulum: from reality to mysticism and back

5.2. Author's hints and hints in the novel

5.3. A medieval carnival in theater the Variety show or a session of black magic (chapter 12)

Test tasks to lectures 4.1, 4.2, 5.1, 5.3, a written task to lecture 5.2

Module 4

Subject 6. Portrait and landscape: why there are a lot of details

6.1. Many-sided and unique

6.2. An appearance – the Mask – the Person – the Face. Wonderful metamorphoses

6.3. "A portrait against …" or "Landshaftik in a gold frame"

Subject 7. Communicative space of the text: monologue, dialogue, polylogue

7.1. Whisper, shout, laughter, whistle, crash and roar: speech portrait of the character

7.2. Communicative duels

Test tasks to each of lectures of the module 4

Module 5

Subject 7. Communicative space of the text: monologue, dialogue, polylogue. Continuation

7.3. Window to the soul

Subject 8. We design an art picture of the world: system of characters

8.1. "You from where you will be?": the place of characters in mifopoetichesky system of images of the novel

8.2. "Tell me who your friend …": partners and antagonists, doubles and antipodes

8.3. "You incidentally did not lose the head?" or "Blood questions": motive of death and immortality

Subject 9. We design an art picture of the world: through images, symbols, key ideas and methods of their expression

9.1. "You, of course, person poor?": motive of exposure

Test tasks to each of lectures of the module 5

Module 6

Subject 9. We design an art picture of the world: through images, symbols, key ideas and methods of their expression. Continuation

9.2. About roses, mimosas, cats and dogs: symbol as quintessence of motive

9.3. "Fire, Water and Copper pipes": motive of test

9.4. "The most terrible defect": motive of a sin and punishment

Subject 10. That the author wanted to tell: text and implication

10.1. "And mercy is sometimes knocked on their hearts": motive of repentance and forgiveness

Epilog

Test tasks to each of lectures of the module 6

Teachers

Tatyana Bankova, Candidate of Philology, associate professor of Russian of philological faculty of National research Tomsk state university

Elena Yurina, Doctor of Philology, associate professor, professor of department of Russian of philological faculty of National research Tomsk state university

Audience

The course is calculated on:

– Russian school students, students of a humanitarian and not humanitarian profile of training;

– teachers of establishments of the general and professional education;

– teachers of Russian and literature, Russian as nonnative and foreign (in Russia and abroad);

– various groups of the foreigners and Russian migrants studying and teaching Russian, knowing language at the A2 level – B1 above (the foreign students of higher education institutions, graduate students, teachers of RKI, persons who are independently learning language for the personal purposes, etc.);

– Russian-speaking compatriots abroad;

– fans of the Russian literature.

Cost and conditions of participation

The course is free. For participation it is necessary to be registered. Successfully mastered a course the opportunity of acquisition of the certificate of the Coursera platform is given. Placement of a course – according to the reference https://www.coursera.org/learn/bulgakov-master-i-margarita.

Preparation level

Studying of this course requires knowledge of a basic course of the Russian literature in volume of high school (for the Russian participants); knowledge of Russian at the A2 level – B1 above (for foreign trained), the read M. A. Bulgakov's novel "Master and Margarita" (for foreign trained perhaps reading in the native language).

**2. The used technical means**

Personal computer, earphones/column, Internet access

**3. Special conditions and requirements of organizational, technical and technological character**

Requirements of organizational character: for studying of a course it is necessary to be registered on the Coursera platform (https://www.coursera.org) and to sign up for a course. The course is free.

Requirements of technical character: Windows (XP, Vista, 7, 10), the Internet browser (Google Chrome, Mozilla Firefox, IE8 above), Adobe Flash Player, the video card with a memory size from 512 MB, the sound card, earphones or columns.

**4. Conditions of transfer of documentation or its sale**

The National research Tomsk state university possesses an exclusive right to all materials of a course which are result of intellectual activity.

# ADVERTISING AND TECHNICAL DESCRIPTION "Mass open online course "Introduction to Parallel Programming with Use of OpenMP and MPI"

*Federal public autonomous educational institution of the higher education "National research Tomsk state university"*

*Bogoslovskij N.N., Danilkin E.A.*

***UDC** 378*

***GRNTI** 14.35.07, 50.05.09, 50.05.03*

**1. Functional purpose of a product, area of its application, its appointment**

About a format of representation of the course "Introduction to Parallel Programming with Use of OpenMP and MPI"

The course "Introduction to Parallel Programming with Use of OpenMP and MPI" is presented in the MOOK popular format. MOOK are the mass open online courses (English – Massive Open Online Course, MOOC) which are based on granting the academic courses from the leading world universities to any person in any corner of the globe by means of remote technologies with observance of accurate terms of delivery of intermediate and final test tasks and a possibility of the organization of free communication between teachers and listeners of a course.

Key features of MOOK are connected with realization of the principles of a continuity and individualization of education, with the solution of a problem of promoting of the modern scientific ideas "packed" into a form, available to understanding:

1. mass character which consists in limitlessness of number of listeners of a course and orientation to wide audience for which it is necessary "simply to tell about difficult";
2. openness which gives the chance to everyone to gain knowledge free of charge, remotely, in convenient time and in the place, convenient for the listener;
3. integrity of the courses including not just fragments of a training material, but also practical tasks, a communicative component, test materials;
4. an opportunity to receive the certificate in case of successful development of a course.

About the maintenance of the course "Introduction to Parallel Programming with Use of OpenMP and MPI"

Requirement of the solution of complex applied challenges with large volume of calculations and basic limitation of the maximum speed "classical" – according to the scheme Neumann's background – COMPUTERS led to emergence of the multiprocessor computing systems (MCS) or supercomputers. Parallel calculations gained the special importance with transition of the computer industry to mass release of multinuclear processors.

Now practically all devices – from pocket gadgets and to the most powerful supercomputers – are equipped with multinuclear processors. And if you write the consecutive program, without having applied distribution of work between different kernels of the central processor, then you use only part of computing opportunities of the central processor.

Supercomputer technologies and high-performance calculations with use of parallel computing systems become an important factor of scientific and technical progress. Their application accepts general character.

In an online course basic knowledge on multinuclear and multiprocessor architecture of computing systems will be given, and also the main approaches to creation of parallel programs with use of the OpenMP and MPI technologies are considered.

Program of the course "Introduction to Parallel Programming with Use of OpenMP and MPI"

<u>Module 1. Introduction to the parallel world</u>

1.1. History of development of overlapping in architecture of the COMPUTER

1.2. The hierarchical organization of memory in the computer

1.3. Main architecture of the multiprocessor computing systems. Their classification

1.4. The review of the tasks demanding use of the Super computer
1.5. Instruments of creation of parallel programs
Materials for independent studying
Test tasks to the module 1
Module 2. OpenMP bases
2.1. Features of programming for systems with the general memory. Concept of process, stream and multithreading
2.2. OpenMP technology, features and its components
2.3. The task of parallel area and an option influencing its performance
2.4. Memory model. Classes of variables in OpenMP
2.5. Modes of implementation of multiline programs. The enclosed overlapping
Materials for independent studying
Test tasks to the module 2
Module 3. Directives of distribution of work and synchronization of work
3.1. Parallelization of performance of cycles
3.2. Distribution of several structural blocks between streams
3.3. Distribution of work on the basis of independent tasks
3.4. Synchronization of performance of various streams. Simple directives
3.5. Synchronization of performance of various streams. Locks
Materials for independent studying
Test tasks to the module 3
Module 4. Vector calculations by means of OpenMP0
4.1. What is vectorization and why it is necessary
4.2. Vectorization of the executed code for modern processors
4.3. New opportunities in the OpenMP 4.0 standard
4.4. Examples of use of vectorization
Materials for independent studying
Test tasks to the module 4
Module 5. The analysis and optimization of programs with use of modern compilers
5.1. Main options of the compiler Intel. Automatic parallelization
5.2. Main opportunities of Intel Parallel Studio
5.3. Search of errors of work with memory with use of Intel® Parallel Inspector
5.4. Profiling of programs with use of Intel® Parallel Amplifier
Materials for independent studying
Test tasks to the module 5
Module 6. Systems with the distributed memory. MPI bases
6.1. The basic concepts of model of transmission of messages, MPI among other development tools of parallel programs
6.2. Basic concepts and definitions, structure of MPI. Syntax of the MPI functions
6.3. The first parallel program with use of MPI
6.4. Acceleration of work of the parallel program
6.5. About creation of parallel algorithms
Materials for independent studying
Test tasks to the module 6
Module 7. Reception and transmission of messages between separate processes
7.1. Review of point-to-point exchanges of messages
7.2. The blocking exchanges
7.3. Non-blocking exchanges
7.4. Parallel algorithms of summation
7.5. The examples of parallel programs showing use of the MPI functions studied in the module 7
Material for independent studying

Test tasks to the module 7

Module 8. Collective operations

8.1. Review of collective operations. Multicasting

8.2. Functions of data collection from all processes

8.3. Functions of distribution of data on all processes

8.4. Functions of a reduction

8.5. The examples of parallel programs showing use of the MPI functions studied in the module 8

Materials for independent studying

Test tasks to the module 8

Module 9. Derivative types of data. Groups and communicators

9.1. Creation and use of derivative types of data

9.2. Creation of groups and communicators

9.3. Virtual topology. Cartesian topology. The organization of transfers of data in the Cartesian topology

9.4. Virtual topology. Topology of the count

9.5. The examples of parallel programs showing use of the MPI functions studied in the module 9

Material for independent studying

Test tasks to the module 9

Teachers

Nikolay Bogoslovsky, candidate of physical and mathematical sciences, associate professor of calculus mathematics and computer modeling of mekhaniko-mathematical faculty of National research Tomsk state university

Evgeny Danilkin, candidate of physical and mathematical sciences, associate professor of calculus mathematics and computer modeling of mekhaniko-mathematical faculty of National research Tomsk state university

Audience

The course will be useful to all programmers and researchers. It can be used as parallel programming, basic for studying of technologies.

Cost and conditions of participation

The course is free. For participation it is necessary to be registered. Successfully mastered a course the opportunity of acquisition of the certificate of the Coursera platform is given. Placement of a course – according to the reference https://www.coursera.org/learn/parallel-programming.

Preparation level

For studying of this course basic knowledge of a programming language C or C ++, and also general idea about architecture of the computer is required.

**2. The used technical means**

Personal computer, earphones/column, Internet access

**3. Special conditions and requirements of organizational, technical and technological character**

Requirements of organizational character: for studying of a course it is necessary to be registered on the Coursera platform (https://www.coursera.org) and to sign up for a course. The course is free.

Requirements of technical character: Windows (XP, Vista, 7, 10), the Internet browser (Google Chrome, Mozilla Firefox, IE8 above), Adobe Flash Player, the video card with a memory size from 512 MB, the sound card, earphones or columns.

**4. Conditions of transfer of documentation or its sale**

The National research Tomsk state university possesses an exclusive right to all materials of a course which are result of intellectual activity.

## ADVERTISING AND TECHNICAL DESCRIPTION "Remote Training Course " Tax Accounting and the Analysis " (the Direction of Preparation 38.05.01 — Economic Security)"

*Federal public budgetary educational institution of the higher education "Ryazan state radio engineering university"*

*SHurchkova I.B.*

***UDC** 378*

***GRNTI** 14.35.07, 06.73.15*

**1 Functional purpose, scope, its restrictions**

The remote training course is intended for students of all forms of education of the direction of preparation 38.05.01 "Economic security" (specialist programme level).

The maintenance of a course is focused on formation of a complex of theoretical knowledge, development of abilities, skills of the organization and conducting tax accounting in economic subjects, and acquisition of the competences necessary for the graduate of the direction of preparation 38.05.01 "Economic security", specialization "Economical legal support of economic security" (specialist programme level) for its professional activity and (or) training in postgraduate study.

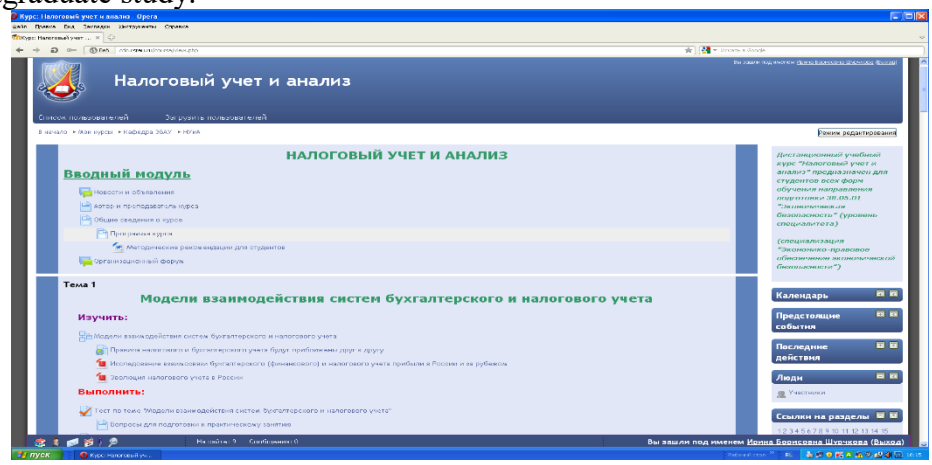



Fig. 1 Main page of a remote training course

The developed remote training course has modular structure. Each module represents the finished fragment with the didactic task directed to formation at students of certain professional competences.

Application of competence-based approach allows to concretize the maintenance of modules of a remote course taking into account the main activities of the teacher in system of distance learning. Modules of a course contain the theoretical, practical and controlling materials directed to formation at students of the professional competences necessary for successful professional activity in the field of tax accounting and the analysis and (or) training in postgraduate study.

Students are provided with a set of electronic educational and methodical and reference materials, detailed instructions and methodical recommendations.

During creation of a remote course the basic principle of development of remote training courses – the most complete and evident idea of a training material providing it independent studying at individual speed and also creation of enough the internal and external relations

allowing to organize effective and fast access for the trainee to necessary information was considered. Interactive elements of communicative appointment allow to establish information exchange with the teacher of a course, to get necessary advice in the on-line mode.

**2. Structure and conditions of application**

The remote training course "Tax accounting and the analysis" consists of 19 modules and has the following structure:

8. Introduction module.
9. Models of interaction of systems of accounting and tax accounting.
10. Conceptual bases of tax accounting.
11. Questions of improvement of tax accounting of the income and expenses.
12. Tax accounting of fixed assets.
13. Tax accounting of intangible assets.
14. Tax accounting of material and production stocks.
15. Tax accounting of costs of production.
16. Tax accounting of finished goods.
17. Tax accounting of goods in retail.
18. Tax accounting of calculations with internal and external contractors.
19. Formation of taxable base on income tax of the organizations.
20. Improvement of the tax reporting.
21. Choice of tax regime as element of tax planning.
22. Accounting policies for the taxation as a factor of optimization of tax payments.
23. Accounting of calculations for income tax of the organizations.
24. The accounting of the postponed taxes according to International Financial Reporting Standards.
25. Final module.
26. Help module.

Information resources and interactive elements – theoretical materials, lectures, practical tasks, workbooks, glossaries, tests, references to Internet resources are a part of each module.

As basic tools for development of a remote course freely extended software package of Moodle representing a learning management system in the electronic environment is used. This system was designed according to requirements of modern pedagogics and for level of the given opportunities bears comparison with the known commercial systems owing to what proved from a positive side in a number of foreign and Russian higher education institutions.

Connection of external references to resources of the Internet allows to expand the educational environment due to attraction of additional sources of information. The system also provides interactive interaction between participants of educational process, and also carrying out different types of control of progress.

Educational and methodical materials of a remote course are presented in the form of files of various formats supported by Moodle (text and web pages, references to files (*.pdf, *.doc, *.ppt, *.gif, *.jpg, etc.), catalogs, archives (*.zip), audio and video files (*.mp3, *.swf, *.avi, *.mpg, *.flv, etc.), animation rollers, references to resources the Internet, etc.

Resources of a course can be studied directly on the computer, or to keep on the local computer for the press and further acquaintance. Interactive elements (workbooks, tasks of various types, glossaries (dictionaries at the rate), forums, chats, polls, tests) allow to focus attention of students on separate fragments of the studied material, to check the level of knowledge, to organize interaction of students with each other and with the teacher.

For work with a remote course it is recommended to use the Mozilla Firefox browser as when using other browsers correct work of the website of distance learning is not guaranteed.

The remote training course "Tax accounting and the analysis" is approved on the basis of the Ryazan state radio engineering university. The course can be used for support of training in internal and remote forms, and also the mixed form which combines classroom occupations with elements of distance learning.

**3. The used technical means**

Requirements to the personal computer of the user for work with a remote training course are presented in the table.

| | Office | |
|---|---|---|
| | At least | Optimum |
| Case (power supply unit) | Mini/Midi Tower of 350 W | Mini/Midi Tower of 350 W |
| Maternal payment (chipset) | AMD 740G + SB700 (CPU AMD), NVIDIA GeForce 8200 (CPU AMD) or Intel G41 + ICH7 (CPU Intel) | AMD 740G + SB710 (CPU AMD), NVIDIA GeForce 8200 (CPU AMD) or Intel G41 + ICH7 (CPU Intel) |
| CCP | AMD Athlon II X2 240 or Intel Pentium Dual-Core E2180 | AMD Athlon II X2 255 or Intel Pentium Dual-Core E5300 |
| RAM | 2 GB DDR2 800 (2x1 GB) | 2 GB DDR2 800 (2x1 GB) |
| Hard drive (HDD) | SATA 250 GB, 7200 rpm | SATA 500 GB, 7200 rpm |
| Network, audio-and graphic (video) of a payment | integrated | integrated |

Work with a remote course requires existence of connection of the computer of the user to the Internet and access to the server of system of distance learning of higher education institution on which this course is placed.

**4. Conditions of transfer and sale of program documentation**

Distribution and use of a remote training course "Tax accounting and the analysis" can be carried out only with the consent of the author.

Reference to a course: Duk_nalogovy analysis and audit

The course can be transferred to the interested person or the organization on the basis of the contract according to the current legislation.

Concerning acquisition it is possible to address in FGBOOU WAUGH "The Ryazan state radio engineering university".

Address: 390005, Ryazan Gagarin St., 59/1

Phone: (4912) 46-04-37

E-mail: cdo@.rsreu.ru

## ADVERTISING AND TECHNICAL DESCRIPTION "The Electronic Educational Resource "Objects of Information Security" (the Direction of Preparation 10.05.03 — Information Security)"

*Federal public budgetary educational institution of the higher education "Ryazan state radio engineering university"*

*Przhegorlinskij V.N., Fomina K.YU., Majorov G.O.*

***UDC** 378*

***GRNTI** 14.35.07, 20.53.17*

**1. Functional purpose of a product, scope, its restrictions**

Today creation of qualitative and effective electronic educational resources is one of the main tasks in the field of education informatization.

The electronic educational resource "Objects of Information Security" of discipline "Objects of information security" represents an electronic educational resource for the students who are trained in the Information security direction for specialties of higher education 10.05.01 – Computer safety, 10.05.03 – Information security of the automated systems. It can be useful also to the experts wishing to improve the skills or to deepen the knowledge in the field of safety of personal information.

The maintenance of this resource will allow trained to gain theoretical knowledge in the field of objects of information security, and also to check the gained knowledge having passed test.

This electronic educational resource is intended for system of additional professional education. Trainees are provided with a set of electronic educational and methodical materials, have an opportunity to check the knowledge, and also to look through results of the tests. This resource allows to provide support of teachers for internal and remote forms of education, significantly having lowered loading. Loading of a remote course requires existence of connection of the computer of the user to the Internet or access to a local network of higher education institution if the resource is on the server of system of distance learning.

**2. The used technical means**

Requirements to the personal computer of the user for work with a remote training course are presented in the table.

| | Office | |
|---|---|---|
| | At least | Optimum |
| Case (power supply unit) | ASUS P5Q PRO<br>350 W | ASUS P5Q PRO<br>350 W |
| Maternal payment (chipset) | ASUS P5Q PRO(CPU Intel), NVIDIA GeForce 560GTi (CPU AMD)<br>iliintelg41 + ICH7 (CPU Intel) | ASUS P5Q PRO(CPU Intel), NVIDIA GeForce 560GTi (CPU AMD)<br>iliintelg41 + ICH7 (CPU Intel) |
| CCP | AMD Athlon II X2 240 or<br>Intel Pentium Dual-Core E2180 | AMD Athlon II X2 255 or<br>Intel Pentium Dual-Core E5300 |
| RAM | 2 GB DDR2 800 | 4 GB DDR2 800 |
| Hard drive (HDD) | SATA 250 GB, 7200 rpm | SATA 500 GB, 7200 rpm |
| Network, audio- and graphic (video) of a payment | Integrated | Integrated |

Work with a remote course requires existence of connection of the computer of the user to the Internet and access to the server of system of distance learning of higher education institution on which this course is placed.

**3. Special conditions and requirements of organizational, technical and technological character**

This EOR consists from 5chasteyi has the following structure:

Part 1. Information security.

1.1. Information security as activity.

1.2. Types of information security.

1.3. Purposes, directions and objects of information security. Information security purposes.

Part 2. Purposes, directions and objects of information security.

2.1. Harmful impact on object of information infrastructure.

2.2. Directions of information security. Information security from leak.

2.3. Information security from unauthorized influence.

2.4. Information security from inadvertent influence.

2.5. Definition of the concept "Object of Information Security".

Part 3. Information as object of protection.

3.1. Information as object of protection. Essence and definition of the concept "information" as object of protection.

3.2. Properties of information as objective phenomenon.

3.3. Information as object of legal relations. A human right and the citizen on access to information in the Russian Federation. Restriction of human rights and the citizen on access to information in the Russian Federation. Categories of access to information in the Russian Federation.

3.4. Types of information of limited access.

3.5. Division of information depending on an order of its granting or distribution.

3.6. Information as one of the most important resources of activity of modern society.

Part 4. Data carrier as object of protection.

4.1. Data carrier as object of protection. Essence and definition of the concept "data carrier". Classification of data carriers.

4.2. Properties of data carriers. Documenting of information and information resources.

Part 5. Information process as object of protection.

5.1. Information resource as object of protection. Essence and definitions of the concept "information process".

5.2. Information process and information technology.

5.3. Information system as means and environment of realization of information process and complex object of information security. Classification of information systems.

After each part there is an intermediate testing, there is also a final test consisting of questions according to all sections.

Development of EOR was carried out to Moodle learning management system.

Materials of this resource can be studied having followed the link in the web browser. It is impossible to keep these materials on the local computer for the press and further acquaintance as it will violate copyright. Interactive elements (magazines of users, tests) allow to carry out correction of a trajectory of training, to check the level of knowledge. For work with a remote course it is recommended to use the MozillaFirefox, GoogleChrome or Opera browser.

This resource allows to provide support of teachers for internal and remote forms of education, significantly having lowered loading.

**4. Conditions of transfer of documentation or its sale**

Distribution and use of this resource can be carried out only with the consent of authors.

The resource can be transferred to the interested person or the organization on the basis of the contract according to the current legislation.

Concerning acquisition it is possible to address in FGBOU VPO "The Ryazan state radio engineering university".

Address: 390005, Ryazan Gagarin St., 59/1

Phone: 46-04-28

E-mail: VNPR@rsreu.ru

**ADVERTISING AND TECHNICAL DESCRIPTION "The Online Olympic Games " the All-Russian Olympic Games on Analytics and Design of Information Systems" (the direction of preparation 09.00.00 - Informatics and computer facilities)"**

*Federal public budgetary educational institution of the higher education "Ryazan state radio engineering university"*

*Kostrov B.V., Klejnosova., Grinchenko N.N., Gromov A.YU.*

***UDC** 378*
***GRNTI** 14.35.07, 20.01.00*

**1. Functional purpose, scope, its restrictions**

The electronic resource is intended for the organization and holding the online Olympic Games "The All-Russian Olympic Games on Analytics and Design of Information Systems" which took place in March-April, 2016 on the basis of the Ryazan state radio engineering university is aimed at the development of forms of network interaction between educational institutions, improvement of quality of vocational training of students in the field of analytics and design of information systems. Tasks of rounds of the Olympic Games are kept with participation of the leading analysts the IT companies OOO "EpamSystems", model real professional activity of analysts on work on the project of the specific customer of information system. The remote form of holding the Olympic Games assumes performance of tasks by teams with use of system of distance learning of RGRTU (http://cdo.rsreu.ru). The electronic resource for holding the online Olympic Games "The All-Russian Olympic Games on Analytics and Design of Information Systems" is placed to the address http://cdo.rsreu.ru/course/view.php?id=1550

Electronic resource to pozvolyaetobespechit access for the registered users to a complete set of organizational and methodical documentation for holding the online Olympic Games, their timely informing, gives an opportunity to receive a task and in due time to send the performed task for check, to receive the qualified job evaluation and comments of jury.

As basic tools for development of an electronic resource freely extended Moodle system is used. Connection of external references to resources of the Internet allows to expand the educational environment due to attraction of additional sources of information. The system provides an opportunity quick kommunikatsiis with organizers, coordinators and participants by means of forums, system of individual messages, mass mailing, the publication of documents for the general access.

**2. Structure and conditions of application**

The electronic resource has modular structure, information necessary for the organization and carrying out each stage of the online Olympic Games (fig. 1) is provided in each module

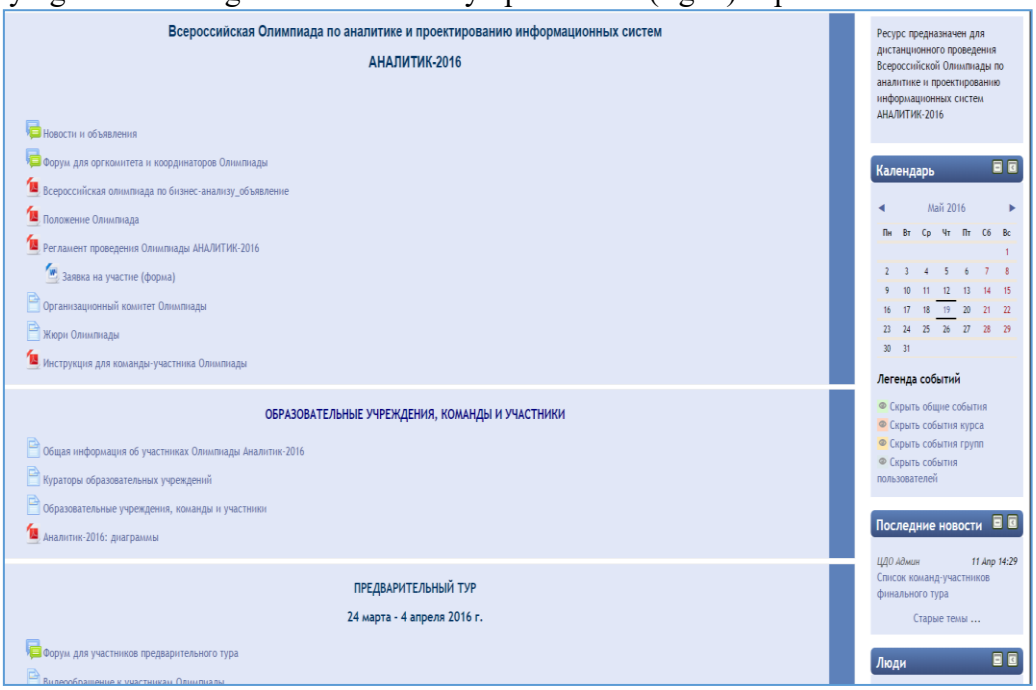



Fig. 1 Main page of an electronic resource

*Introduction razdeloderzhit* a complete set of organizational and methodical documentation for holding the online Olympic Games: The provision on carrying out, the regulations, the announcement, a form of the application for participation, instruction for

participating team, the booklet for organizers, a forum for all categories of users (organizers, coordinators from educational institutions, participating teams).

Lists of educational institutions and coordinators, the teams participating in the online Olympic Games and also analytical information on participants in each round are presented in the section "Educational Institutions, Teams and Participants".

The Section "Preliminary Round" contains record of video of the address of organizers to participants of the Olympic Games, the text of a task of preliminary round, a template of registration of the answer.

For all participants before preliminary round the webinar within which explanations on performance of a task of preliminary round were given, to criteria for evaluation of works was held, answers to questions of coordinators and participants are provided.

The task of preliminary round assumes team work on automation of the certain subject domain determined by organizers: razrabotkuer-charts in any notation which includes ER model drawing, the short description of model, the assumption and restriction within which this model was described.

In the second part of a task it is necessary to carry out the review of the offered requirements for the module of creation of the order, to find and correct all defects in requirements. The template of registration of a task was developed for convenience of work of teams and check of tasks of jury.

For sending the performed task the interactive element "Task with the Answer in the form of Several Files" is used that gives the chance to command to send several files for check.

After carrying out round the protocol of preliminary round and the list of participants of final round are published.

The reference to a webinar for captains and coordinators, information on an order of preparation of team for final round and regulations of carrying out, and also criteria for evaluation of final works is posted in the section "Final Round".

For interaction of platforms during final round the webinar format on the Mirapolis platform, by means of which teams from various regions of the Russian Federation could see the address of organizers, receive a task for final round, and also to see the course of work of teams on all platforms of educational institutions is used.

The task of final round modelled a real situation of preparation of the offer for the customer of a mobile application in the form of the presentation which contained the main opportunities of the solution proposed by team (functions, the scale, registration, technical features of realization). The presentation might contain the description of functionality and logical model of data of system, its architecture and forms of the user interface.

After carrying out the protocol of final round is published.

Information on an awards ceremony, the general release on holding the online Olympic Games, the reference to broadcasting on YouTube channel is provided in the section "Rewarding", after carrying out rewarding the archive of photos for all participants and electronic copies of diplomas of winners is placed.

The list of the Internet sources recommended by organizers on design and the presentation of information systems who allow to understand the principles of creation of systems and to review concrete examples of the presentation of opportunities of information system is presented in the section *"Reference materials"*.

**3. The used technical means**

Work with an electronic resource the online Olympic Games "the All-Russian Olympic Games on analytics and design of information systems" requires presence at the user of the computer of office configuration with connection in the Internet. Access can be also provided when using mobile devices. **Work with a resource and viewing of the training material presented in different formats, performance of tasks of rounds of the Olympic Games requires installation of the software:**

- Mozilla Firefox or Google Chrome browser);

- programmadlyaprosmotra of PDF files (Adobe Reader, Foxit Reader);
- package of office programs (OpenOffice, MS Office).

Participation in a webinar requires existence of a multimedia font (the webcam, earphones or columns).

**4. Conditions of transfer and sale of program documentation**

Distribution and use of the online Olympic Games "The All-Russian Olympic Games on analytics and design of information systems" can be carried out only with the consent of the author.

The electronic resource can be transferred to the interested person or the organization on the basis of the contract according to the current legislation.

Concerning acquisition it is possible to address in FGBOOU WAUGH "The Ryazan state radio engineering university".

Address: 390005, Ryazan, Gagarin St., 59/1

Phone: (4912) 46-03-50

E-mail: cdo@rsreu.ru

## ADVERTISING AND TECHNICAL DESCRIPTION "Remote Training Course " the Organization and a Technique of Carrying Out Tax Audits " (the Directions of Preparation 38.03.01 — Economy, 38.05.01 — Economic Security)"

*Federal public budgetary educational institution of the higher education "Ryazan state radio engineering university"*

*SHurchkova I.B*

***UDC** 378*

***GRNTI** 14.35.07, 06.73.15*

**1 Functional purpose, scope, its restrictions**

The remote training course is intended for training of students of all forms of education of the directions of preparation 38.03.01 "Economy" and 38.05.01 "Economic security".

The maintenance of a course is focused on formation of a complex of theoretical knowledge, development of abilities, skills of understanding, interpretation and application of the normative legal acts regulating the taxation in the Russian Federation for implementation of actions of tax control and acquisition of the competences necessary for graduates of the directions of preparation 38.03.01 "Economies" (bachelor degree level) and 38.05.01 "Economic security", specialization "Economical legal support of economic security" (specialist programme level) for professional activity.

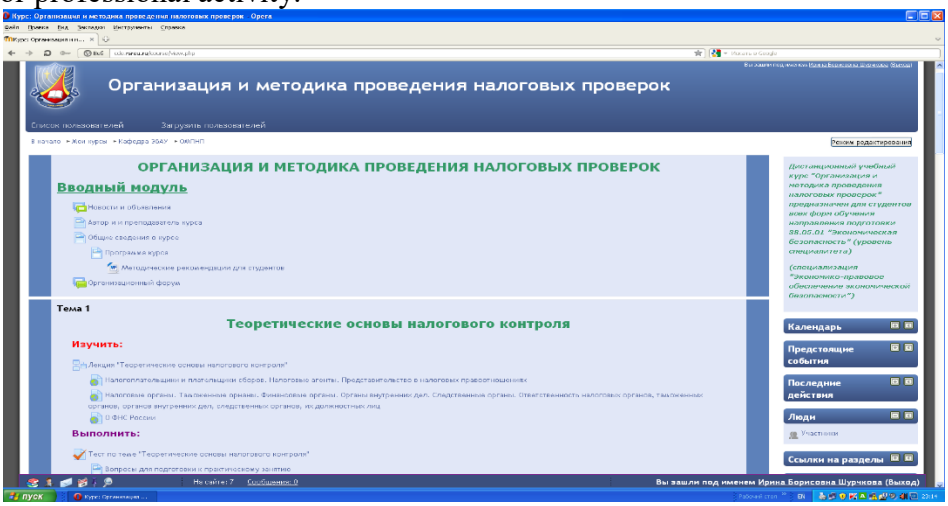



Fig. 1 Main page of a remote training course

The developed remote training course has modular structure. Each module represents the finished fragment with the didactic task directed to formation at students of certain professional competences.

Application of competence-based approach allows to concretize the maintenance of modules of a remote course taking into account the main activities of the teacher in system of distance learning. Modules of a course contain the theoretical, practical and controlling materials directed to formation at students of the professional competences necessary for successful professional activity in the field of the taxation.

Students are provided with a set of electronic educational and methodical and reference materials, detailed instructions and methodical recommendations.

During creation of a remote course the basic principle of development of remote training courses – the most complete and evident idea of a training material providing it independent studying at individual speed and also creation of enough the internal and external relations allowing to organize effective and fast access for the trainee to necessary information was considered. Interactive elements of communicative appointment allow to establish information exchange with the teacher of a course, to get necessary advice in the on-line mode.

**2. Structure and conditions of application**

The remote training course "The organization and a technique of carrying out tax audits" consists of 10 modules and has the following structure:

27. Introduction module.
28. Theoretical bases of tax control.
29. Registration functions of tax authorities.
30. Selection of taxpayers for exit tax audits, the pretest analysis.
31. Tax audits and other actions of tax control.
32. Registration of results of tax audit.
33. Realization of results of tax audit.
34. Tax control in connection with transactions between affiliated persons.
35. Final module.
36. Help module.

Information resources and interactive elements – theoretical materials, lectures, practical tasks, workbooks, glossaries, tests, references to Internet resources are a part of each module.

As basic tools for development of a remote course freely extended software package of Moodle representing a learning management system in the electronic environment is used. This system was designed according to requirements of modern pedagogics and for level of the given opportunities bears comparison with the known commercial systems owing to what proved from a positive side in a number of foreign and Russian higher education institutions.

Connection of external references to resources of the Internet allows to expand the educational environment due to attraction of additional sources of information. The system also provides interactive interaction between participants of educational process, and also carrying out different types of control of progress.

Educational and methodical materials of a remote course are presented in the form of files of various formats supported by Moodle (text and web pages, references to files (*.pdf, *.doc, *.ppt, *.gif, *.jpg, etc.), catalogs, archives (*.zip), audio and video files (*.mp3, *.swf, *.avi, *.mpg, *.flv, etc.), animation rollers, references to resources the Internet, etc.

Resources of a course can be studied directly on the computer, or to keep on the local computer for the press and further acquaintance. Interactive elements (workbooks, tasks of various types, glossaries (dictionaries at the rate), forums, chats, polls, tests) allow to focus attention of students on separate fragments of the studied material, to check the level of knowledge, to organize interaction of students with each other and with the teacher.

For work with a remote course it is recommended to use the Mozilla Firefox browser as when using other browsers correct work of the website of distance learning is not guaranteed.

The remote training course "The organization and a technique of carrying out tax audits" is approved on the basis of the Ryazan state radio engineering university. The course can be used for support of training in internal and remote forms, and also the mixed form which combines classroom occupations with elements of distance learning.

**3. The used technical means**

Requirements to the personal computer of the user for work with a remote training course are presented in the table.

| | Office | |
|---|---|---|
| | At least | Optimum |
| Case (power supply unit) | Mini/Midi Tower of 350 W | Mini/Midi Tower of 350 W |
| Maternal payment (chipset) | AMD 740G + SB700 (CPU AMD),<br>NVIDIA GeForce 8200 (CPU AMD)<br>or Intel G41 + ICH7 (CPU Intel) | AMD 740G + SB710 (CPU AMD),<br>NVIDIA GeForce 8200 (CPU AMD)<br>or Intel G41 + ICH7 (CPU Intel) |
| CCP | AMD Athlon II X2 240 or<br>Intel Pentium Dual-Core E2180 | AMD Athlon II X2 255 or<br>Intel Pentium Dual-Core E5300 |
| RAM | 2 GB DDR2 800 (2x1 GB) | 2 GB DDR2 800 (2x1 GB) |
| Hard drive (HDD) | SATA 250 GB, 7200 rpm | SATA 500 GB, 7200 rpm |
| Network, audio-and graphic (video) of a payment | integrated | integrated |

Work with a remote course requires existence of connection of the computer of the user to the Internet and access to the server of system of distance learning of higher education institution on which this course is placed.

**4. Conditions of transfer and sale of program documentation**

Distribution and use of a remote training course "The organization and a technique of carrying out tax audits" can be carried out only with the consent of the author.

Reference to a course: Duk_organization and technique of carrying out tax audits

The course can be transferred to the interested person or the organization on the basis of the contract according to the current legislation.

Concerning acquisition it is possible to address in FGBOOU WAUGH "The Ryazan state radio engineering university".

Address: 390005, Ryazan Gagarin St., 59/1

Phone: (4912) 46-04-37

E-mail: cdo@.rsreu.ru

## ADVERTISING AND TECHNICAL DESCRIPTION "Remote Training Course " Tax Planning " (the Direction of Preparation 38.03.01 — Economy, 38.04.02 — Management)"

*Federal public budgetary educational institution of the higher education "Ryazan state radio engineering university"*

*SHurchkova I.B.*

***UDC** 378*

***GRNTI** 14.35.07, 06.73.15*

**1 Functional purpose, scope, its restrictions**

The remote training course is intended for undergraduates of all forms of education which are trained on the directions of preparation 38.04.01 "Economy" and 38.04.02 "Management".

The maintenance of a course is focused on formation of a complex of profound theoretical knowledge, development of abilities, skills of adoption of administrative decisions in the field of tax planning and development of business, and acquisition of the competences necessary for graduates of the directions of preparation 38.04.01 "Economy" and 38.04.02 "Management" for successful professional activity and (or) training in postgraduate study.

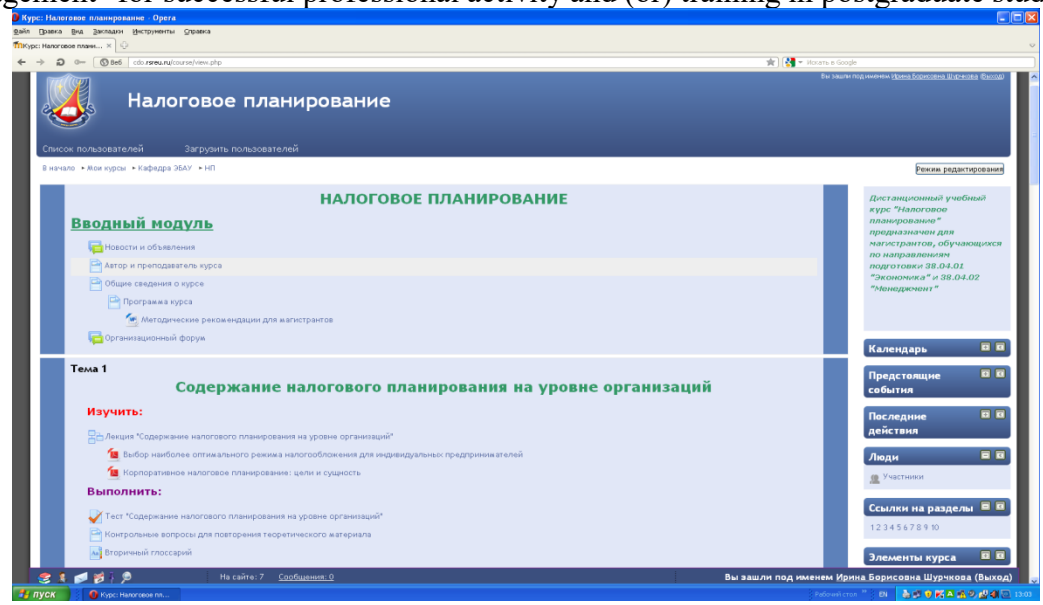



Fig. 1 Main page of a remote training course

The developed remote training course has modular structure. Each module represents the finished fragment with the didactic task directed to formation at undergraduates of certain professional competences.

Application of competence-based approach allows to concretize the maintenance of modules of a remote course taking into account the main activities of the teacher in system of distance learning. Modules of a course contain the theoretical, practical and controlling materials directed to formation at undergraduates of the professional competences necessary for successful professional activity in the field of tax planning and (or) training in postgraduate study.

Undergraduates are provided with a set of electronic educational and methodical and reference materials, detailed instructions and methodical recommendations.

During creation of a remote course the basic principle of development of remote training courses – the most complete and evident idea of a training material providing it independent studying at individual speed and also creation of enough the internal and external relations allowing to organize effective and fast access for the trainee to necessary information was considered. Interactive elements of communicative appointment allow to establish information exchange with the teacher of a course, to get necessary advice in the on-line mode.

**2. Structure and conditions of application**

The remote training course "Tax planning" consists of 11 modules and has the following structure:

37. Introduction module.
38. Content of tax planning at the level of the organizations.
39. International corporate tax planning.
40. Regions of the preferential taxation in the territory of the Russian Federation.
41. Accounting and contractual policies of economic subjects for optimization of taxes.
42. Planning of separate taxes.
43. Forms of change of term of payment of taxes.
44. Tax planning in system of financial management.

45. Tax burden of the economic subject. Methods of its calculation and decrease.
46. Final module.
47. Help module.

Information resources and interactive elements – theoretical materials, lectures, practical tasks, workbooks, glossaries, tests, references to Internet resources are a part of each module.

As basic tools for development of a remote course freely extended software package of Moodle representing a learning management system in the electronic environment is used. This system was designed according to requirements of modern pedagogics and for level of the given opportunities bears comparison with the known commercial systems owing to what proved from a positive side in a number of foreign and Russian higher education institutions.

Connection of external references to resources of the Internet allows to expand the educational environment due to attraction of additional sources of information. The system also provides interactive interaction between participants of educational process, and also carrying out different types of control of progress.

Educational and methodical materials of a remote course are presented in the form of files of various formats supported by Moodle (text and web pages, references to files (*.pdf, *.doc, *.ppt, *.gif, *.jpg, etc.), catalogs, archives (*.zip), audio and video files (*.mp3, *.swf, *.avi, *.mpg, *.flv, etc.), animation rollers, references to resources the Internet, etc.

Resources of a course can be studied directly on the computer, or to keep on the local computer for the press and further acquaintance. Interactive elements (workbooks, tasks of various types, glossaries (dictionaries at the rate), forums, chats, polls, tests) allow to focus attention of undergraduates on separate fragments of the studied material, to check the level of knowledge, to organize interaction of undergraduates with each other and with the teacher.

For work with a remote course it is recommended to use the Mozilla Firefox browser as when using other browsers correct work of the website of distance learning is not guaranteed.

The remote training course "Tax planning" is approved on the basis of the Ryazan state radio engineering university. The course can be used for support of training in internal and remote forms, and also the mixed form which combines classroom occupations with elements of distance learning.

**3. The used technical means**

Requirements to the personal computer of the user for work with a remote training course are presented in the table.

| | Office | |
|---|---|---|
| | At least | Optimum |
| Case (power supply unit) | Mini/Midi Tower of 350 W | Mini/Midi Tower of 350 W |
| Maternal payment (chipset) | AMD 740G + SB700 (CPU AMD),<br>NVIDIA GeForce 8200 (CPU AMD)<br>or Intel G41 + ICH7 (CPU Intel) | AMD 740G + SB710 (CPU AMD),<br>NVIDIA GeForce 8200 (CPU AMD)<br>or Intel G41 + ICH7 (CPU Intel) |
| CCP | AMD Athlon II X2 240 or<br>Intel Pentium Dual-Core E2180 | AMD Athlon II X2 255 or<br>Intel Pentium Dual-Core E5300 |
| RAM | 2 GB DDR2 800 (2x1 GB) | 2 GB DDR2 800 (2x1 GB) |
| Hard drive (HDD) | SATA 250 GB, 7200 rpm | SATA 500 GB, 7200 rpm |
| Network, audio- and graphic (video) of a payment | integrated | integrated |

Work with a remote course requires existence of connection of the computer of the user to the Internet and access to the server of system of distance learning of higher education institution on which this course is placed.

**4. Conditions of transfer and sale of program documentation**

Distribution and use of a remote training course "Tax planning" can be carried out only with the consent of the author.

Reference to a course: Duk_nalogovy planning

The course can be transferred to the interested person or the organization on the basis of the contract according to the current legislation.

Concerning acquisition it is possible to address in FGBOOU WAUGH "The Ryazan state radio engineering university".

Address: 390005, Ryazan Gagarin St., 59/1

Phone: (4912) 46-04-37

E-mail: cdo@.rsreu.ru

## ADVERTISING AND TECHNICAL DESCRIPTION "Course "Theory and Technique of Musical Education" (Direction: 050708 Pedagogics and technique of primary education)"

*VEBKURS limited liability company*

*Sindikova G.M.*

***UDC** 378*

***GRNTI** 14.35.07*

**1. Functional purpose of the program**

The course "Theory and Technique of Musical Education" in LMS Moodle for the pedagogical directions is one of tutorials of students of the Federation Council of BASHGU in the field of primary education.

The purpose of this resource is directed to increase of efficiency of educational process of students on the disciplines connected with area of primary education by means of a combination of traditional and electronic training. The electronic educational and methodical resource "Theory and Technique of Musical Education" allows to organize more effectively training process, gives the chance to each future teacher independently to sort theoretical material and to prepare for a practical training.

The main objective of the course "Theory and Technique of Musical Education" in LMS Moodle is directed to formation at students of bases of musical and pedagogical, spiritual culture; development of the art parties of the personality by means of acquaintance to bases of musical art in historical and theoretical and methodical aspects.

Problems of a course:

1. Development of philosophical, culturological, historical, psychological, pedagogical, musicological knowledge in the field of the theory and practice of music education and education.
2. Formation of skills of implementation of musical, educational educational work in initial classes.
3. Development in future elementary school teachers of musical esthetic taste, interest in musical art. - education of spiritually rich personality capable to solve the problems connected with development and improvement of an inner world of the child.

The structure of the electronic educational and methodical resource "Theory and Technique of Musical Education" is based on the block and modular principle of construction and includes the following blocks:

1. Communicative block (e-mail, my schedule, forum);

2. The instructive block (a news forum, methodical instructions to studying of discipline, the list of questions to offset, methodical instructions to independent work of students)

3. The information block (lecture material, questions for discussion, independent studying of subjects, recommendations for preparation for a practical training, presentation material, etc.).

4. Diagnostic block (tests, final assessment (offset).

5. Additional materials (references on Internet and Internet resources, the glossary).

Lecture material of the course "Theory and Technique of Musical Education" is presented by means of the Web page resource which gives an opportunity of addition of the hypertext in HTML format. For creation of web pages the special built-in editor is used. This type of a resource is the most convenient for placement of educational content. In addition it is possible to attach the presentations to lectures, audio-and videos. The student always has a possibility of repeated reference to places, unclear at reading, alternations of reading with considering, the analysis. Besides, in the text it is easier to see the general structure of contents.

At the end of each lecture students are offered to answer questions and to check quality of the acquired material. The correct answers to questions allow to pass to the following page.

Moodle possesses the developed system of testing in which all popular formats of test questions therefore in the diagnostic block test tasks to each subject of a course are presented are considered.

The glossary (dictionary) allows to organize work with terms, at the same time not only teachers, but also students can create dictionary entries. The system allows to create both the glossary of a course, and the global glossary available to participants of all courses.

The forum is convenient for educational discussion of problems, for carrying out consultations. The forum can be used and for loading by students of files – in that case around these files it is possible to construct educational discussion, to give the chance trained to estimate works of each other.

Use of this software allows to deepen and order significantly knowledge of students in preschool education.

**Scope, its restrictions**

The course "Theory and Technique of Musical Education" in LMS Moodle is intended for use on local computers, in local networks and the Internet. Use of this software product is possible in higher educational institutions, average special educational institutions, in establishments of additional education and professional development of shots. Use of the considered educational resource allows to organize more effectively training process, to increase the volume of the studied material, gives the chance to each student independently to sort material and to prepare for a practical training.

For development of discipline "The theory and a technique of musical education" students use knowledge, abilities, skills created in the course of studying of musical art at comprehensive school. The knowledge gained in the course of studying of discipline "The theory and a technique of musical education" is necessary for development of such objects as "Cultural science", "A technique of training and education", etc.

Use of this software product allows to increase the volume of the considered material, to organize the differentiated and personal focused approach in training, to increase efficiency of independent work of students due to use of a learning management system of LMS Moodle with realization of methods, means and forms mixed (traditional and electronic) training.

**2. The used technical means**

Any computer supporting PHP, and also SQL databases.

The software product works under control of LMS Moodle and the Windows or Mac operating systems and many kinds of linux (for example, Red Hat or Debian GNU), and also existence of the browser is necessary (Internet Explorer, Mozilla Firefox, Netscape, Opera, etc.).

**3. Special conditions of application and requirement of organizational, technical and technological character**

Special conditions of application and the requirement of organizational character are not required.

4. **Conditions of transfer of program documentation or its sale**

Record on various data carriers is possible.

Conditions of transfer (sale) of the program it is discussed in each case.

## ADVERTISING AND TECHNICAL DESCRIPTION "The Monograph "Legal Proceedings Language" (the Direction 030900.62 — Law, a Profile — a Magistracy, Postgraduate Study)"

*Sterlitamak branch of Federal public budgetary educational institution of the higher education "Bashkir state university"*

*Ishmuhametov YA.M.*

***UDC** 378*

***GRNTI** 14.35.07, 10.79.01*

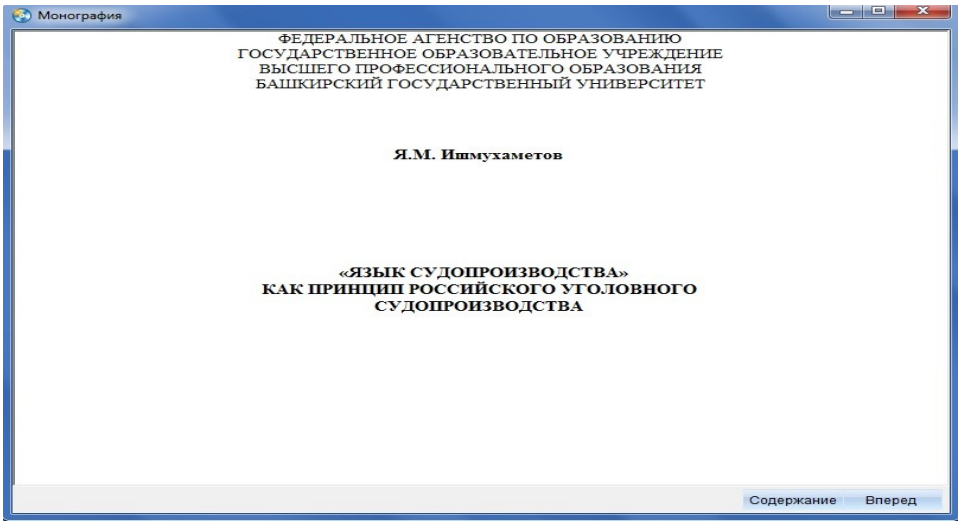
**1. Functional purpose of a product, scope, its appointment**

Various parties of the principle of language of legal proceedings are covered in the monograph on the basis of the complex, system analysis. For the first time, taking into account acting Criminal - the procedural Code of the Russian Federation research of questions of realization of the principle of language of legal proceedings in criminal trial is conducted. Also in the monograph the procedural status of the translator at all stages of criminal trial is defined.

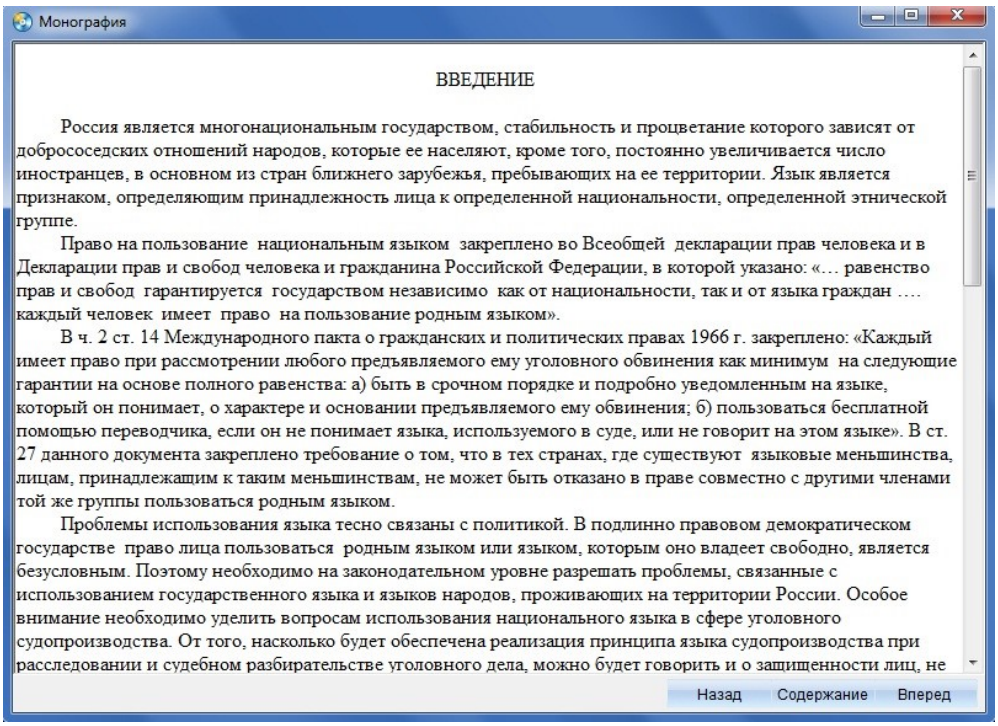
The monograph is intended to scientists, graduate students, students, teachers criminal and legal a cycle of legal higher education institutions, and also to practical employees of law enforcement agencies.

Screenshots of the electronic monograph are given below

1




2




**2. The used technical means**

The electronic monograph "Legal Proceedings Language" as the principle of criminal trial is created with use of the software of AutoPlay Media Studio of version 8.0.7.0.

Text information is created when using the Microsoft Office package 2007.

**3. Special conditions and requirements of organizational, technical and technological character**

As the principle of criminal trial belongs to necessary conditions of application of the Electronic monograph "Legal Proceedings Language": existence of the Intel Pentium computer above; 20 Mb of free disk space; Windows XP OS above; software of Flash Player of version 8.0 above.

**4. Conditions of transfer of documentation or its sale**

Condition of transfer of this software product is the contract of purchase and sale signed between the Sterlitamak branch of the Bashkir state university and interested party.

## ADVERTISING AND TECHNICAL DESCRIPTION "The Electronic Monograph "Concession Policy of Bolsheviks in the 1920th." (the Direction 030900.62 — Law, a Profile — a Bachelor Degree)"

*Sterlitamak branch of Federal public budgetary educational institution of the higher education "Bashkir state university"*

*Kosyh E.S.*

***UDC** 94 (47).084*
***GRNTI** 03.23.55*

**1. Functional purpose of a product, scope, its appointment**

World and Russian practice proved that a flexible and effective way of attraction of investments into various branches of economy are concessions for which it is only necessary to create accurate and attractive conditions to realization.

On July 26, 2005 in Russia the federal law No. 115-FZ "About concession agreements" took effect. Attraction of investments into economy of the Russian Federation, ensuring effective use of the property which is in the state or municipal ownership on the basis of concession agreements and improvement of quality of goods, the works and services provided to

consumers" were called the purposes of the law ". Though by a legislative way opportunities to participate in creation and/or operation of objects of the state and municipal ownership in the mode of concession were open for natural and legal entities, special activity in implementation of the law still was not observed.

Among the reasons of such situation it is possible to call both imperfection of the law, and long absence at us in the country of concession practice. Meanwhile in our country rich historical experience of use of concessions, both during the pre-revolutionary period, and in days of the New Economic Policy is saved up.

The monograph "Concession Policy of Bolsheviks in the 1920th." lights concession policy which was pursued by the Soviet government for the purpose of an exit from an economic crisis and adjustment of trade and economic relations with the capitalist countries.

The contents of the monograph conform to the Federal state educational standard of higher education of the third generation and requirements imposed to scientific publications.

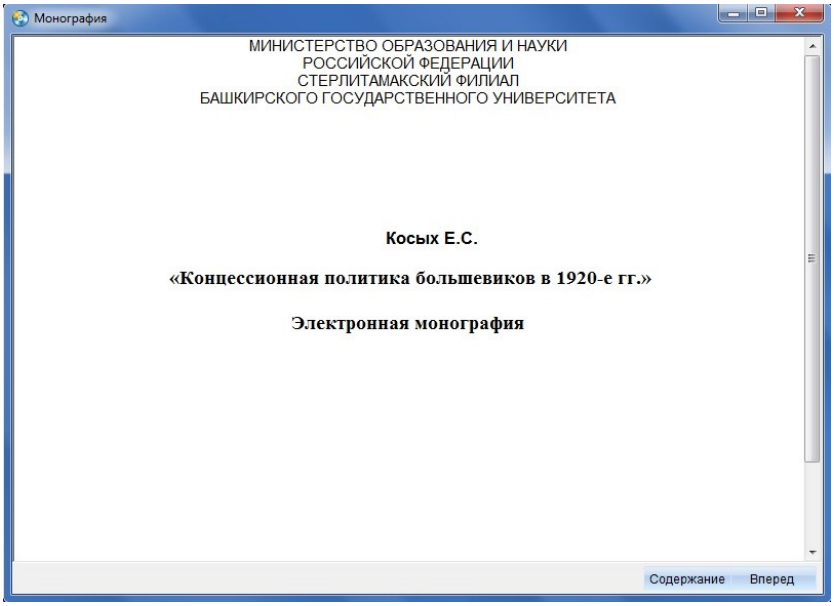
The purpose of this monograph is research of development and folding of the concession relations in the USSR in the 1920th.

Monograph tasks: to prove need of transition to use of concessions during formation in the country of the Soviet power; to show concession practice which developed in the period 1920 x x years irrespective of domestic economic policy of the Soviet power; to reveal ways of registration of concession in the Soviet Union; to establish the noneconomic and main economic reasons of folding of the concession relations in the USSR.

The monograph is intended for students of historical and legal faculties, to historians and all who are interested in history of Russia.

Screenshots of the electronic monograph are given below

1

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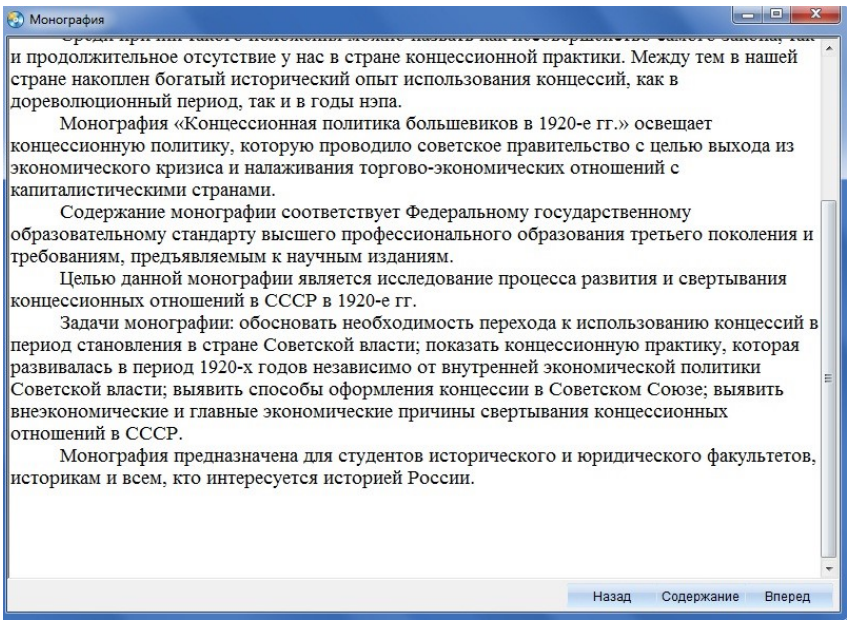



**2. The used technical means**

The electronic monograph "Concession Policy of Bolsheviks in the 1920th." is created with use of the software of AutoPlay Media Studio of version 8.0.7.0.

Text information is created when using the Microsoft Office package 2007.

**3. Special conditions and requirements of organizational, technical and technological character**

The electronic monograph "Concession Policy of Bolsheviks in the 1920th." belongs to necessary conditions of application: existence of the Intel Pentium computer above; 20 Mb of free disk space; Windows XP OS above; software of Flash Player of version 8.0 above.

**4. Conditions of transfer of documentation or its sale**

Condition of transfer of this software product is the contract of purchase and sale signed between the Sterlitamak branch of the Bashkir state university and interested party.

## ADVERTISING AND TECHNICAL DESCRIPTION "An electronic workbook for students of all specialties of all forms of education on discipline "Philosophy"

*Sterlitamak branch of Federal public budgetary educational institution of the higher education "Bashkir state university"*

*Nafikova A.I.*

***UDC** 378*

***GRNTI** 14.35.07, 02.01.20*

**1. Functional purpose of a product, scope, its appointment**

The modern period of development of a civilized society characterizes informatization process. One of the priority directions of process of informatization of modern society is education informatization – introduction of means of new information technologies in an education system.

As the main task of educational policy achievement of new, modern quality of education, its compliance to actual and perspective needs of the personality, society and state moves forward.

The electronic workbook for independent work of students of all specialties of all forms of education on discipline "Philosophy" represents methodically worked system of questions and

tasks for independent work which allow students to acquire basic provisions of a course.

The discipline "Philosophy" belongs to a humanitarian, social and business cycle of disciplines (basic part) of the Federal state educational standard of higher education in the direction of preparation "030900.62 Law", to a profile of preparation "State and legal". The knowledge, skills received during studying of discipline have to be used by students comprehensively: at all grade levels in higher education institution; during further training in a magistracy; in the course of the follow-up professional activity at the solution of the tasks demanding application of actual legal information. Methodologically and substantially the discipline is connected with disciplines "Political science", "Logic", "Professional ethics".

The disciplines which are trained for successful development "Philosophy" have to have the knowledge, skills received when studying discipline "Social science" from the school program.

Materials of the Electronic workbook for independent work of students of all specialties of all forms of education on discipline "Philosophy" allow to organize independent activity in development of a subject matter, to carry out regular control and an assessment of knowledge and abilities of students.

Use of the Electronic workbook for independent work of students of all specialties of all forms of education on discipline "Philosophy" allows more systemically and streamlining to carry out a cycle of training in a course, and also considerably facilitates to teachers the organization of classes in a course and check of digestion of material by students.

The electronic workbook for independent work of students of all specialties of all forms of education on discipline "Philosophy" is calculated on optimization of efforts of the student in his independent work: by preparation for seminar occupations, for offset or examination

The software product contains all main materials in a subject.

Material is stated in the form of tasks on all subjects of discipline. Thanks to ergonomic design pleasantly and comfortably to work with a course of lectures.

The edition includes the structured material:

5. Title page
6. Introduction
7. Subjects for independent studying
8. List of references

The electronic workbook for independent work of students of all specialties of all forms of education on discipline "Philosophy" is presented by the subjects assuming studying of methodological fundamentals of philosophy, paradigms of modern knowledge, methods and methods of research of reality; knowledge acquisition about the main sections of philosophy; studying of ideas of philosophers; mastering skills of scientific work in the course of educational activity.

Development stages of an electronic workbook for independent work of students of all specialties of all forms of education on discipline "Philosophy"

1) inspection of object and justification of need of creation of an electronic workbook for independent work of students of all specialties of all forms of education on discipline "Philosophy"

2) systematization of a training material;

3) creation of the hypertext version of an electronic workbook for independent work of students of all specialties of all forms of education on discipline "Philosophy" on the basis of the HTML language;

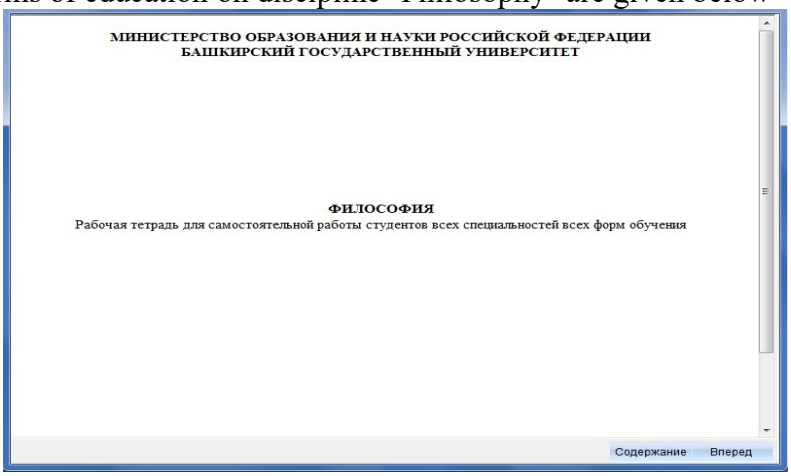
4) studying of the existing analogs of an electronic workbook for independent work of students of all specialties of all forms of education on discipline "Philosophy"

5) creation of objects of interactive virtual demonstration installations, development of design means of computer graphics;

6) development of the ergonomic, comfortable interface of the user, by means of the software of AutoPlay Media Studio 8.0.7.0.

The user interface provides comfortable interaction of the user with the software product. The interface of system is clear and convenient in use, conforms to modern ergonomic requirements.

Screenshots of an electronic workbook for independent work of students of all specialties of all forms of education on discipline "Philosophy" are given below

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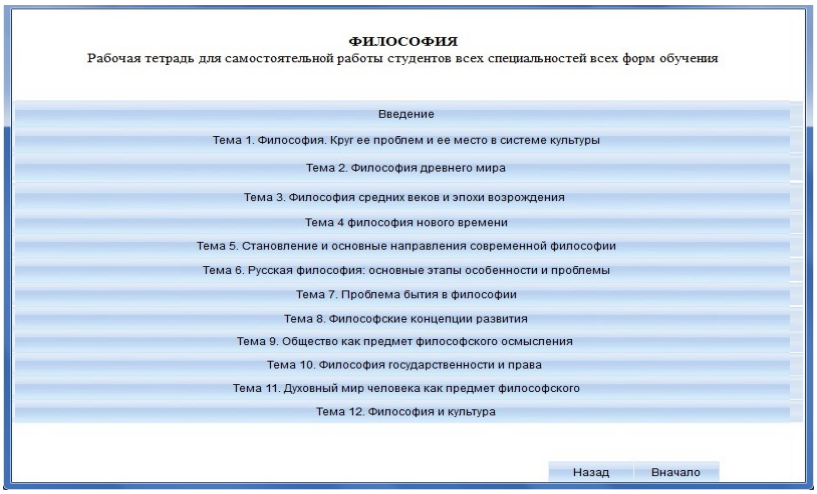


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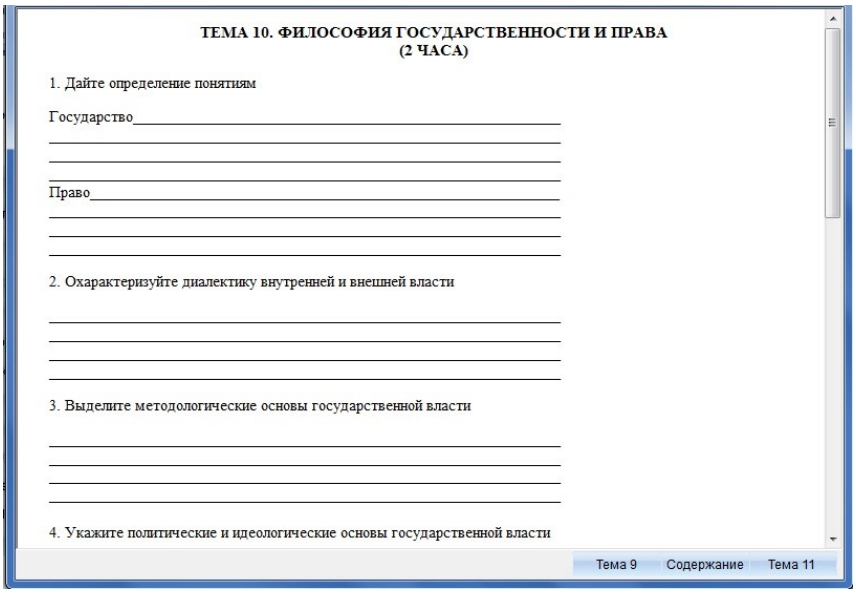


**2. The used technical means**

The electronic workbook for independent work of students of all specialties of all forms of education on discipline "Philosophy" is created with use of the software of AutoPlay Media Studio of version 8.0.7.0.

Text information is created when using the Microsoft Office package 2007.

The electronic workbook for independent work of students of all specialties of all forms of education on discipline "Philosophy" can be used both at independent studying of disciplines, and on occupation under the leadership of the teacher when studying material.

The purpose of independent work of students consists in full assimilation of a training material and in development of skills of self-education through work with scientific-theoretical literature and the practical materials necessary for profound studying of the office right, and also development in them of steady abilities to independent (without the assistance of the teacher) to studying, a statement and application of the obtained information.

**3. Special conditions and requirements of organizational, technical and technological character**

Electronic workbook for independent work of students of all specialties of all forms of education on discipline "Philosophy" belongs to necessary conditions of application of the edition: existence of the Intel Pentium computer above; 20 Mb of free disk space; Windows XP OS above; software of Flash Player of version 8.0 above.

**4. Conditions of transfer of documentation or its sale**

Condition of transfer of this software product is the contract of purchase and sale signed between the Sterlitamak branch of the Bashkir state university and interested party.

## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic joint monograph "Role of Traditions in Development of Local Government on an Example of the Republic of BashkoAdvertising and technical descriptionstan"

*Sterlitamak branch of Federal public budgetary educational institution of the higher education "Bashkir state university"*

*Usmanova R.M., Aleshin P.N., Ivancova G.A. . Myslyaeva N.S.*

***UDC** 342.55*
***GRNTI** 10.16.01*

**1. Functional purpose of a product, scope, its appointment**

Local government, being an appropriate level of the public power, the most approximate to the population, it is directed first of all to realization and protection of all interests of the population that is provided by means of fixing in norms of the municipal right of guarantees of realization of the rights of citizens and responsibility of bodies of the public power.

The local community is that Wednesday in which the person is formed, joins in process of political and legal socialization, gains necessary qualities for the solution of the questions connected with direct activity of the territorial collective, with the concrete district and at the same time playing an important role for the state in general.

In this situation it is necessary to use possibilities of the right as special social regulator of the public relations at the local level. However some parties and lines of socially significant behavior of people, requirements and interests remain out of legal all-standard regulation. Here the special part is assigned to other social unlawful regulators – traditions which work in municipality and by means of which the public relations in system of local government are governed.

Need of the historical analysis of a territorial self-government in Russia, especially on materials of the Ufa province as one of regions of the country where the concept of a territorial

self-government was realized, is explained by the fact that, first, it considered historical traditions, ethnoculture, and multidimensionality of the Russian society in general, and secondly, this concept contained positive elements of the western models of social management.

In the Electronic joint monograph "Role of Traditions in Development of Local Government on an Example of the Republic of BashkoAdvertising and technical descriptionstan" to be carried out historical and legal the analysis of development of a territorial self-government in Russia on the example of the Ufa province.

The contents of the monograph conform to the Federal state educational standard of higher education of the third generation and requirements imposed to scientific publications.

Monograph tasks: to consider concept of local government and to select the main political and legal theories in the context of the matter; to analyse legal bases of the organization of a territorial self-government; to track evolution of institute of a territorial self-government in Russia; to consider formation and development of a territorial self-government in the Ufa province; to allocate experience of institute of a zemstvo of the Ufa province in optimization of activity of local governments.

The electronic joint monograph "Role of Traditions in Development of Local Government on an Example of the Republic of BashkoAdvertising and technical descriptionstan" is intended for students of historical and legal faculties, and to all who are interested in history of Russia.

Screenshots of the electronic joint monograph are given below

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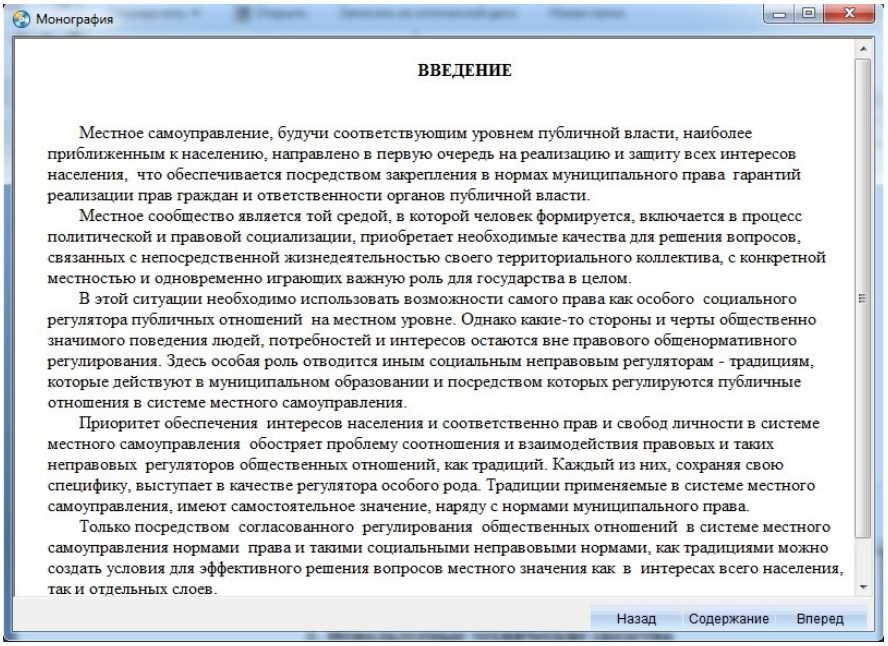


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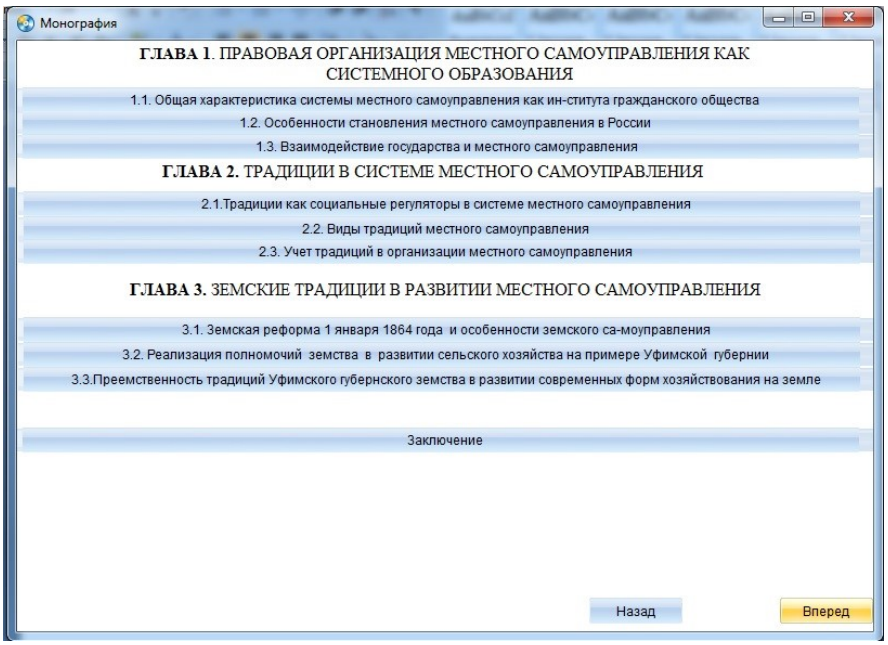


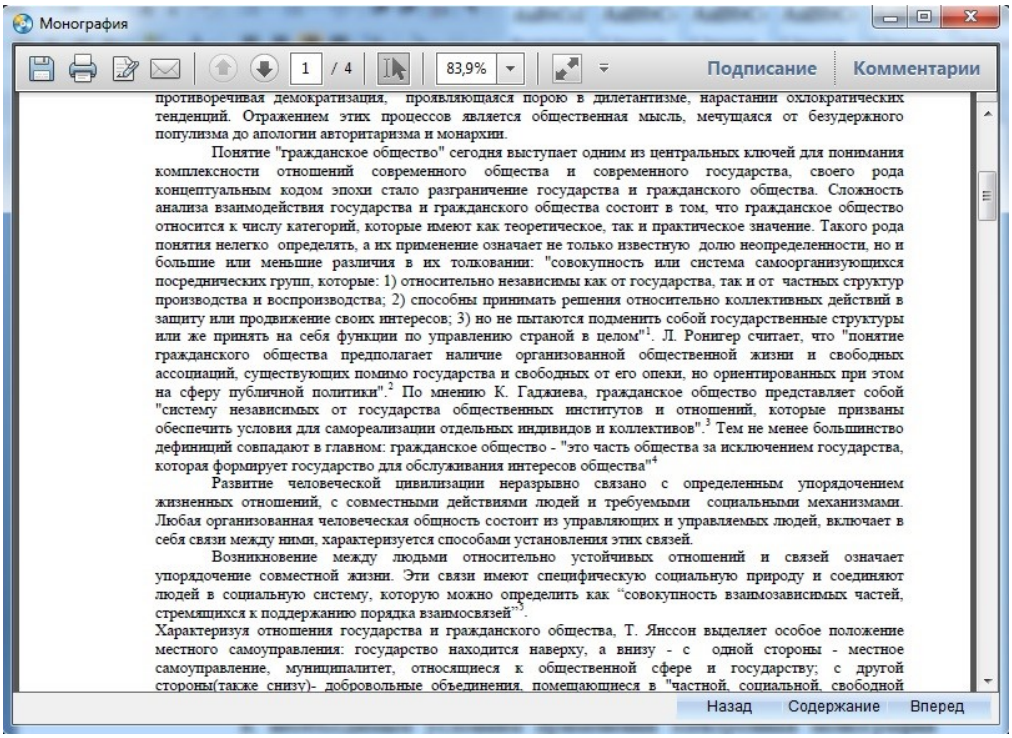


**2. The used technical means**

The electronic joint monograph "Concession Policy of Bolsheviks in the 1920th." is created with use of the software of AutoPlay Media Studio of version 8.0.7.0.

Text information is created when using the Microsoft Office package 2007.

**3. Special conditions and requirements of organizational, technical and technological character**

Treats necessary conditions of application of the electronic joint monograph "Role of Traditions in Development of Local Government on an Example of the Republic of BashkoAdvertising and technical descriptionstan": existence of the Intel Pentium computer above; 20 Mb of free disk space; Windows XP OS above; software of Flash Player of version 8.0 above; software of Adobe Reader 8.0 above.

**4. Conditions of transfer of documentation or its sale**

Condition of transfer of this software product is the contract of purchase and sale signed between the Sterlitamak branch of the Bashkir state university and interested party.

## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic monograph "The municipal right in system of public regulation of the public relations: problems of the theory and practice"

*Sterlitamak branch of Federal public budgetary educational institution of the higher education "Bashkir state university"*

*Usmanova R.M.*

***UDC** 378*

***GRNTI** 14.35.07, 10.16.01*

**1. Functional purpose of a product, scope, its appointment**

The monograph is devoted to definition of the place of the municipal right in system of public regulation of the public relations. In work the analysis of public regulation of the public relations in system of local government is carried out, the system of norms by means of which this regulation is carried out reveals. All aspects of a ratio of municipal and legal regulation and public unlawful regulation of the relations in the sphere of local government are investigated, ability of traditions, customs and obyknoveniye to act independent the regulator - mi the public relations at the local level is considered. Separately in the monograph prospects of public regulation of the public relations at the local level are analyzed. The monograph is addressed to all who are interested in problems of local government

The user interface provides comfortable interaction of the user with the software product. The interface of system is clear and convenient in use, conforms to modern ergonomic requirements.

Screenshots of the electronic monograph are given below

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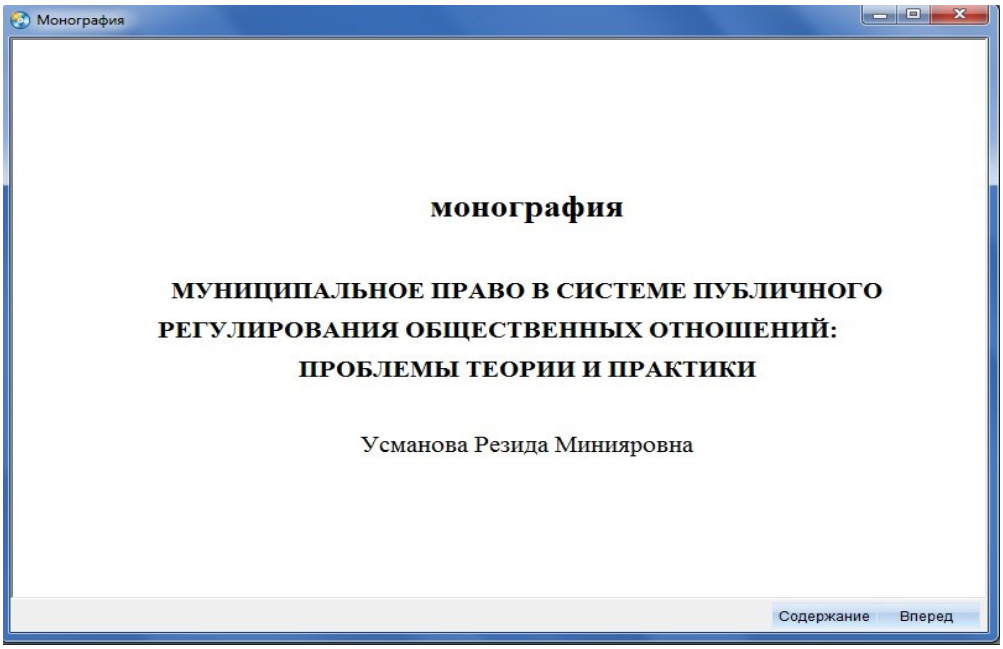


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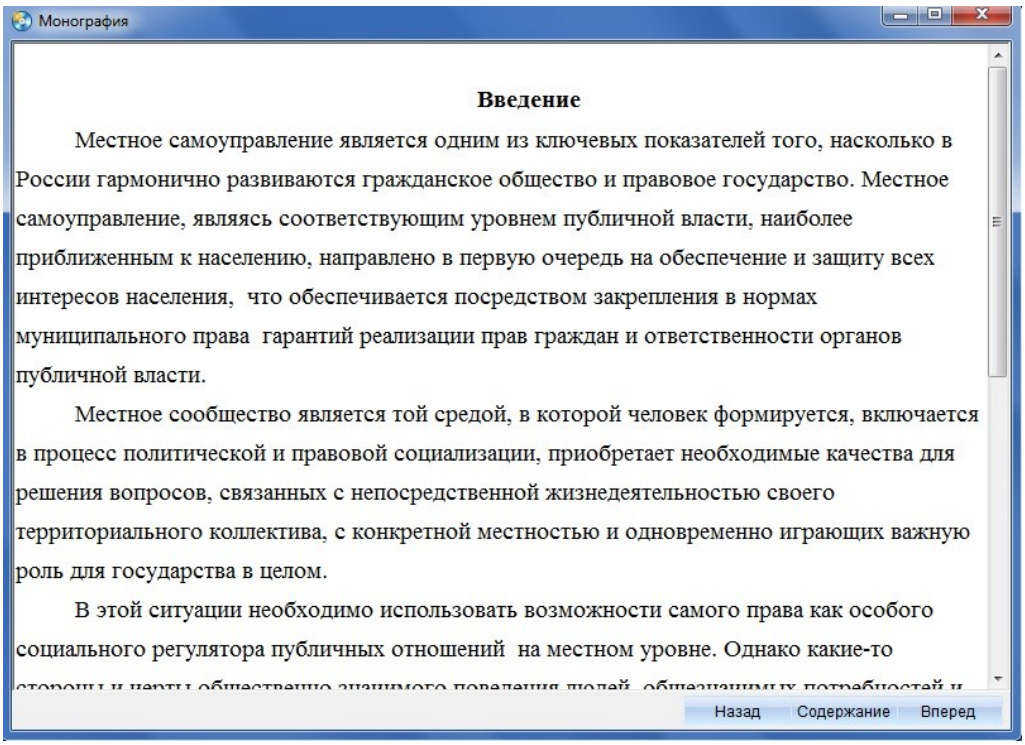


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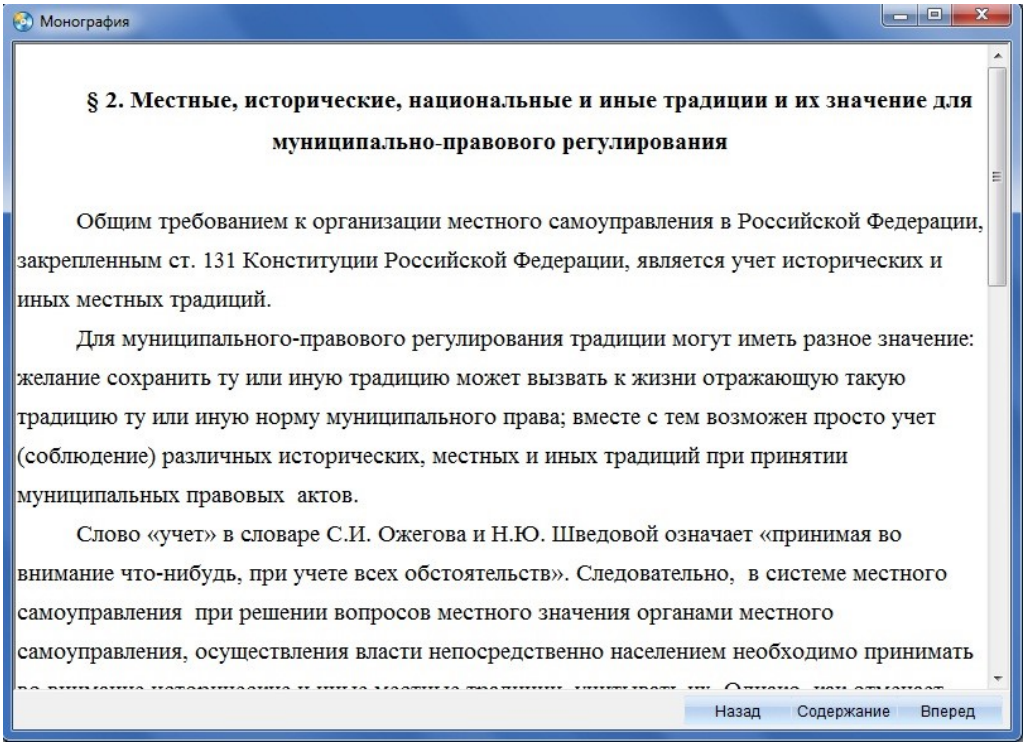


**2. The used technical means**

The electronic monograph "The municipal right in system of public regulation of the public relations: problems of the theory and practice" it is created with use of the software of AutoPlay Media Studio of version 8.0.7.0.

Text information is created when using the Microsoft Office package 2007.

**3. Special conditions and requirements of organizational, technical and technological character**

Treats necessary conditions of application of the Electronic monograph: existence of the Intel Pentium computer above; 20 Mb of free disk space; Windows XP OS above; software of Flash Player of version 8.0 above.

**4. Conditions of transfer of documentation or its sale**

Condition of transfer of this software product is the contract of purchase and sale signed between the Sterlitamak branch of the Bashkir state university and interested party.

## ADVERTISING AND TECHNICAL DESCRIPTION "Mass open online course "Psychodiagnostics"

*Federal public autonomous educational institution of the higher education "National research Tomsk state university"*

*Petrova V.N.*

***UDC** 378, 159.947, 159.922*

***GRNTI** 14.35.07, 14.35.01, 15.21.45, 15.21.51*

**1. Functional purpose of a product, area of its application, its appointment**

About a format of representation of the course "Psychodiagnostics"

The course "Psychodiagnostics" is presented in the MOOK popular format. MOOK are the mass open online courses (English – Massive Open Online Course, MOOC) which are based on granting the academic courses from the leading world universities to any person in any corner of the globe by means of remote technologies with observance of accurate terms of delivery of intermediate and final test tasks and a possibility of the organization of free communication between teachers and listeners of a course.

Key features of MOOK are connected with realization of the principles of a continuity and individualization of education, with the solution of a problem of promoting of the modern scientific ideas "packed" into a form, available to understanding:

1. mass character which consists in limitlessness of number of listeners of a course and orientation to wide audience for which it is necessary "simply to tell about difficult";
2. openness which gives the chance to everyone to gain knowledge free of charge, remotely, in convenient time and in the place, convenient for the listener;
3. integrity of the courses including not just fragments of a training material, but also practical tasks, a communicative component, test materials;
4. an opportunity to receive the certificate in case of successful development of a course.

About the maintenance of the course "Psychodiagnostics"

The course "Psychodiagnostics" is directed on:

– formation of adequate idea of a variety of methods of modern psychodiagnostics;

– deep studying of modern international ethical standards of work of the psychologist-psychodiagnostician;

– development of technologies of determination of reliability of the results received by means of various methods of diagnostics;

– studying of classical and modern approaches to diagnostics of intelligence, personal features, potential of endowments and potential of achievements of the personality;

– formation of basic skills of application of classical methods of psychodiagnostics.

The program of this course assumes training in modern ways of recognition, measurement and the description of individual and psychological features of the person; studying of regularities of removal of valid and reliable diagnostic judgments, rules of "diagnostic conclusions" by means of which transition from signs or indicators of certain mental states, structure, process to ascertaining of existence and expressiveness of these psychological

variables is carried out; performance of the majority of basic techniques of psychodiagnostics and formation of skill of interpretation of the received results.

Studying of this course will allow to master technologies of the conclusion of the informed consent with the client to application of diagnostic procedure; checks of reliability of the applied diagnostic methods and results received by means of various methods of diagnostics. The course will also teach to apply standard diagnostic techniques and various types of diagnostic scales, to normalize their values, and also to interpret results of diagnostics.

Program of the course "Psychodiagnostics"

Module 1. Psychodiagnostics as science

Subject 1.1. Purposes and problems of the course Psychodiagnostics

Subject 1.2. Historical roots of modern psychodiagnostics

Subject 1.3. Subject and features of modern psychodiagnostics

Subject 1.4. Comparative characteristic of psychological diagnostics and psychological assessment

Subject 1.5. Ethical problems and dilemmas of psychodiagnostics

Subject 1.6. Modern international standards of work of the psychologist - the psychodiagnostician

The test, tasks to discussion at a forum to subjects 1.1, 1.2, 1.3, 1.4, 1.5

Module 2. General psychodiagnostics and psychometrics

Subject 2.1. Nomotetichesky and ideographic approach in modern psychodiagnostics

Subject 2.2. Classification of diagnostic techniques

Subject 2.3. Structure and representativeness of a psychological test

Subject 2.4. Reliability

Subject 2.5. Validity

Subject 2.6. Types and types of diagnostic scales

The test, tasks to discussion at a forum to subjects 2.1, 2.2, tasks for performance and interpretation of techniques to subjects 2.3, 2.6

Module 3. Intelligence psychodiagnostics

Subject 3.1. Diagnostics of elementary abilities

Subject 3.2. Traditional approach in diagnostics of intelligence

Subject 3.3. The criteria focused approach in diagnostics of intelligence

Subject 3.4. Structural approach in diagnostics of intelligence

Subject 3.5. Diagnostics of emotional, social and ethical intelligence

The test, tasks to discussion at a forum to subjects 3.1, 3.2, 3.3, tasks for performance and interpretation of techniques to subjects 3.4, 3.5

Module 4. Classical psychodiagnostics of the personality

Subject 4.1. Ways of collecting empirical data on personal features

Subject 4.2. Typological approach in diagnostics of the personality

Subject 4.3. Diagnostics of aktsentuation

Subject 4.4. Psychodynamic approach in diagnostics of the personality

Subject 4.5. Structural and block approach in diagnostics of the personality

The test, task for peer-to-peer estimation to a subject 4.2, tasks for implementation of tests to discussion at a forum to subjects 4.1, 4.3, 4.4, 4.5

Module 5. Integrative approach in psychodiagnostics

Subject 5.1. Diagnostics of potential of endowments

Subject 5.2. Interactive approach in diagnostics

Subject 5.3. Group technicians of psychodiagnostics

Subject 5.4. Narrative approach in diagnostics of the personality

Task for peer-to-peer estimation to a subject 5.1, tasks to discussion at a forum to subjects 5.2, 5.3

Final test

Teacher

Valeria Petrova, candidate of psychological sciences, associate professor of organizational psychology of National research Tomsk state university

Audience

The course is focused on students of a bachelor degree of the humanitarian and management directions, masters and graduate students with various level of preparation, HR managers and experts the client - the focused profile.

Cost and conditions of participation

The course is free. For participation it is necessary to be registered. Successfully mastered a course the opportunity of acquisition of the certificate of the Coursera platform is given. Placement of a course – according to the reference https://www.coursera.org/learn/psykhodyahnostyka.

Preparation level

**2. The used technical means**

Personal computer, earphones/column, Internet access

**3. Special conditions and requirements of organizational, technical and technological character**

Requirements of organizational character: for studying of a course it is necessary to be registered on the Coursera platform (https://www.coursera.org) and to sign up for a course. The course is free.

Requirements of technical character: Windows (XP, Vista, 7, 10), the Internet browser (Google Chrome, Mozilla Firefox, IE8 above), Adobe Flash Player, the video card with a memory size from 512 MB, the sound card, earphones or columns.

**4. Conditions of transfer of documentation or its sale**

The National research Tomsk state university possesses an exclusive right to all materials of a course which are result of intellectual activity.

## ADVERTISING AND TECHNICAL DESCRIPTION "Mass open online course "Work Psychology, Engineering Psychology and Ergonomics"

*Federal public autonomous educational institution of the higher education "National research Tomsk state university"*

*Petrova V.N.*

***UDC*** *378, 159.9, 331.101.1, 331.101.3*

***GRNTI*** *14.35.07, 14.37.01, 15.81.29, 15.81.31*

**1. Functional purpose of a product, area of its application, its appointment**

About a format of representation of the course "Work Psychology, Engineering Psychology and Ergonomics"

The course "Work Psychology, Engineering Psychology and Ergonomics" is presented in the MOOK popular format. MOOK are the mass open online courses (English – Massive Open Online Course, MOOC) which are based on granting the academic courses from the leading world universities to any person in any corner of the globe by means of remote technologies with observance of accurate terms of delivery of intermediate and final test tasks and a possibility of the organization of free communication between teachers and listeners of a course.

Key features of MOOK are connected with realization of the principles of a continuity and individualization of education, with the solution of a problem of promoting of the modern scientific ideas "packed" into a form, available to understanding:

1. mass character which consists in limitlessness of number of listeners of a course and orientation to wide audience for which it is necessary "simply to tell about difficult";

2. openness which gives the chance to everyone to gain knowledge free of charge, remotely, in convenient time and in the place, convenient for the listener;

3. integrity of the courses including not just fragments of a training material, but also practical tasks, a communicative component, test materials;

4. an opportunity to receive the certificate in case of successful development of a course.

About the maintenance of the course "Work Psychology, Engineering Psychology and Ergonomics"

The course "Work Psychology, Engineering Psychology and Ergonomics" assumes the active analysis of own professional experience, and also comparison of results of own systematic supervision over Basic Elements of work and these references.

The course is directed on:

– understanding of interdisciplinarity and gumanitarnost of a problem of studying of features of work;

– deep studying of the most important laws in various branches of scientific knowledge of work;

– development of technologies of the effective organization of activity and regulation of working capacity and exhaustion;

– studying of methods of diagnostics of a professional orientation of the person;

– studying of the main theoretical approaches to understanding of motivation of work;

– studying of concepts of professionalism and professional crises;

– development of technologies of effective creation of career.

The program of this course assumes the active analysis of own professional experience, and also comparison of results of own systematic supervision over Basic Elements of work and these references.

Results of training in this course consist in:

– formation of skill of recognition of various functional conditions of the worker in the course of work;

– development of technology of definition like a professional orientation of the person;

– development of technology of identification of basic motivator of work;

– formation of skill of determination of level of professionalism and indicators of presence of professional destructions at the worker;

– formation of skill of application of basic procedures of maintenance and support of process of professionalizing of the worker.

Program of the course "Work Psychology, Engineering Psychology and Ergonomics"

Module 1. The branches of science which are engaged in studying of work.

Subject 1.1. History of development of humanitarian knowledge of work.

Subject 1.2. Formation of scientific branches of studying of work in the 20th century.

Subject 1.3. Engineering psychology and HCI as sciences.

Subject 1.4. Ergonomics as science.

Subject 1.5. Work psychology as science.

The test, task to discussion at a forum to a subject 1.1

Module 2. Psychological characteristics of work.

Subject 2.1. Work as subject of humanitarian researches.

Subject 2.2. Working capacity.

Subject 2.3. Exhaustion.

Subject 2.4. Work-rest schedule.
Subject 2.5. Concept of a profession.
Subject 2.6. Ways of the description of professions.
The test, tasks for peer-to-peer estimation to a subject 2.4, a task to discussion at a forum to a subject 2.6
Module 3. Motivation of work.
Subject 3.1. Early scientific theories of motivation to work.
Subject 3.2. Social and psychological approach to motivation of work.
Subject 3.3. Substantial theories of motivation.
Subject 3.4. Procedural theories of motivation.
The test, task to discussion at a forum to a subject 3.4
Module 4. Professionalism psychology.
Subject 4.1. Valuable approach to understanding of professionalism.
Subject 4.2. Professionalizing stages.
Subject 4.3. Competence-based approach to professionalism.
Subject 4.4. Professional crises.
Subject 4.5. Professional destructions.
The test, tasks to discussion at a forum to subjects 4.1, 4.2, 4.4
Module 5. Modern approaches to creation of career.
Subject 5.1. Concept of self-determination and its basic characteristics.
Subject 5.2. Integrative concepts of self-determination.
Subject 5.3. Professional self-determination.
Subject 5.4. Professional prospect.
Subject 5.5. Modern approaches to understanding of career.
The test, task to discussion at a forum to a subject 5.5
Module 6. Management of career and vocational guidance.
Subject 6.1. Concept of vocational guidance.
Subject 6.2. Professional education and promotion and vocational education.
Subject 6.3. Professional selection and professional selection.
Subject 6.4. Professional adaptation and professional rehabilitation.
Subject 6.5. Professional consultation.
Final test
Teacher

Valeria Petrova, candidate of psychological sciences, associate professor of organizational psychology of National research Tomsk state university

Audience

The course is focused on three categories of listeners:

– HR managers, experts, facing need of practical application of technologies of motivation and the effective organization of activity, both concerning, and concerning subordinated;

– students of programs of an internal and correspondence bachelor degree of the humanitarian and management directions of education

– the masters and graduate students with various level of preparation who were trained according to programs of a bachelor degree in various higher education institutions and on various specialties.

Cost and conditions of participation

The course is free. For participation it is necessary to be registered. Successfully mastered a course the opportunity of acquisition of the certificate of the Coursera platform is given. Placement of a course – according to the reference https://www.coursera.org/learn/psykhologiya-truda.

Preparation level

For training at the rate it is necessary to have the basic common cultural competences created on younger courses of a bachelor degree.

**2. The used technical means**

Personal computer, earphones/column, Internet access

**3. Special conditions and requirements of organizational, technical and technological character**

Requirements of organizational character: for studying of a course it is necessary to be registered on the Coursera platform (https://www.coursera.org) and to sign up for a course. The course is free.

Requirements of technical character: Windows (XP, Vista, 7, 10), the Internet browser (Google Chrome, Mozilla Firefox, IE8 above), Adobe Flash Player, the video card with a memory size from 512 MB, the sound card, earphones or columns.

**4. Conditions of transfer of documentation or its sale**

The National research Tomsk state university possesses an exclusive right to all materials of a course which are result of intellectual activity.

## ADVERTISING AND TECHNICAL DESCRIPTION "The Mass Open Online Course "Hunters of Chelovek" or Social Networks in Media, Business, Recruiting and Education"

*Federal public autonomous educational institution of the higher education "National research Tomsk state university"*

*Gluhov A.P., Okushova G.A., Stahovskaya Y.M*

***UDC*** *378, 304, 316.6*

***GRNTI*** *14.35.07, 14.35.01, 15.41.21, 15.41.39, 04.51.65*

**1. Functional purpose of a product, area of its application, its appointment**

About a format of representation of a course "Hunters of chelovek" or social networks in media, business, recruiting and education"

The course "Hunters of chelovek" or social networks in media, business, recruiting and education" is presented in the MOOK popular format. MOOK are the mass open online courses (English – Massive Open Online Course, MOOC) which are based on granting the academic courses from the leading world universities to any person in any corner of the globe by means of remote technologies with observance of accurate terms of delivery of intermediate and final test tasks and a possibility of the organization of free communication between teachers and listeners of a course.

Key features of MOOK are connected with realization of the principles of a continuity and individualization of education, with the solution of a problem of promoting of the modern scientific ideas "packed" into a form, available to understanding:

1. mass character which consists in limitlessness of number of listeners of a course and orientation to wide audience for which it is necessary "simply to tell about difficult";
2. openness which gives the chance to everyone to gain knowledge free of charge, remotely, in convenient time and in the place, convenient for the listener;
3. integrity of the courses including not just fragments of a training material, but also practical tasks, a communicative component, test materials;
4. an opportunity to receive the certificate in case of successful development of a course.

About the maintenance of a course "Hunters of chelovek" or social networks in media, business, recruiting and education"

The world strongly changed since those times when people communicated between themselves by means of letters on paper and by means of a voice, all of us now, we set a trap for someone the relations and we get to them, all of us from now on live in the Network of the Global web.

In this new world of networks old methods of building relations do not work: journalists of printing editions do not read in paper option, the marketing specialists staking only on offline - work, ruin the companies, PR managers and advertisers lose offline - audiences, the HR specialist who is not able to work in networks does not obtain reliable information about the candidates.

The only exit for the professional: to go to the Network, "look for and you obryashcht"!

The course will help to learn:

– what networks exist and as the psychology of "the virtual and network person" changes,

– why bloggers test from the activity pleasure and what is civil journalism,

– as the friend - business and as the companies do of consumers of allies, advisers and employees works,

– how to find work or the worker in the Network,

– how to organize a virtual party or a virtual competition.

The key purpose of a course – to give basic knowledge and skills of use of social networks and social media in professional communications of journalists, marketing specialists, PR managers and advertisers, recruiters and educational managers. The course represents the short introduction to the virtual world of social networks and social media intended as for receiving general idea about an inkorporirovannost of social networks in all fields of activity of modern information society, and a set practical a case-stadi and councils for use of instruments of social communications on platforms of social media in activity of journalists in the field of new media, experts in the organization of work with youth, PR managers and advertisers, marketing specialists and HR specialists.

**The program of a course "Hunters of chelovek" or social networks in media, business, recruiting and education"**

Module 1. Tekhnoevolyution of social platforms: from "electronic cases" it (is mainframe) to collective intelligence of social media

1.1. Artificial Intellect: evolution of machine reason: from "electronic cases" it (is mainframe) to the personal computer (PC)

1.2. Who and when weaved these networks: short history of the World wide web

1.3. "Be Your Own Producer" (journalist, photographer): user content as feature of the Web 2.0

1.4. Vikinomika and N-Geners (prosumers): crowdsourcing as the principle of cooperation in the Network

1.5. Friends offline and "friends" online: function of support of weak social communications

Test, task for peer-to-peer estimation

Module 2. "Networks everyones are necessary, networks everyones are important" or Virtual self-made-man: variety of services of social media and life in "public"

2.1. "Creation of the person in a network": freedom of creativity or compensation of lameness?

2.2. Lexicon, semantics and ethics of network communication

2.3. From online confessions before "chirping": Collective and personal blogs and microblogs (LiveJournal (LiveJournal) and Twitter)

2.4. "OK" or "VK", here in what a question" or the Multiuser popular social networks ("FaceBook", "VKontakte", "Schoolmates", "LinkedIn", "My world")

2.5. A selfie as art or make the TV channel: popular photos and video hostings (Instagram, Flickr, Picasa, Youtube, Rutube)

2.6. From "The cheerful farmer" to "The second life" (Second Life): The multiplayer network games (Massively Multiplayer Online Games) and Alternate Reality Games (games in alternative reality)

Test, task for peer-to-peer estimation

Module 3. Blogging: virtual whim or new instrument of reputation management?

3.1. As the Magazine became Live: short history of blogging

3.2. Rumor force: bloggers as creators of versus destroyers of reputation

3.3. Death of the printing press release: blogger relations for the PR specialist

3.4. Blogging: simple recipes

3.5. Corporate blog: what to write about and how to untwist?

Test, task for peer-to-peer estimation

Module 4. "Like me" or the friend - business: principles and forms of the SMM organization (social media marketing) and advertizing

4.1. "Life after death" of a telebox or Social media marketing: tasks, basic principles, strategy and algorithm of actions

4.2. Where to take place or marketing characteristics and features of the main a brand platforms: "Schoolmates", "VKontakte", "Facebook" and "Twitter"

4.3. Live group or support of activity: work with lawyers of a brand and function content - and community managers

4.4. Advertizing in networks: from "firing at the areas" to hyper targeting

4.5. Manual and automatic monitoring of mentions of a brand on social networks. Russian-language services of monitoring

Test, task for peer-to-peer estimation

Module 5. "Become the hunter of chelovek" or a virtual party and headhunting in networks

5.1. Networks in business and business in a network: professional platforms – LinkedIn, Профессионалы.ру, Rb.ru Doostang

5.2. HR in networks: Reputation of the worker and recruiter. Main stages: establishment of trust to the recruiter, contact maintenance, maintenance in open form of communications with uncomfortable candidates

5.3. How not to go to recruitment agency: advice to candidates on job search on social networks

5.4. Virtual party: how to organize an event with use of a social platform

5.5. "Whose forfeit won" or the organization of virtual competitions in a network

Test, task for peer-to-peer estimation

Module 6. Education by "parcel" or social services of remote education

6.1. Factories of educational content, or mass online courses as educational trend

6.2. We create, we communicate, we cooperate: the collaborative Web 2.0 services on service of education

6.3. Trends in education for "digital natives": mobile training and gamification

6.4. How not to become "dinosaur" in education: from technophobia to the teaching self-presentation in the Network

6.5. From the advertizing brochure to interactive immersion or how to present University to Networks: a case-stadi of advance of NI TGU on social networks

6.6. Conclusion: main conclusions and results of a course. "Guests from the future" or utopia of society of social networks

Test, two tasks for peer-to-peer estimation

Final test

**Teachers**

Andrey Glukhov, candidate of philosophical sciences, associate professor of social communications of faculty of psychology of National research Tomsk state university

Okushov's Gulnafist, candidate of philosophical sciences, associate professor of social communications of faculty of psychology of National research Tomsk state university

Yulia Stakhovskaya, senior teacher of department of social communications of faculty of psychology of National research Tomsk state university

**Audience**

The course is designed for future and acting experts in the field of journalism, marketing and advertizing communications, the organization of work with youth, remote education and recruiting, undergraduates of the appropriate professional educational programs which realized need of professional development or receiving basic knowledge on use of social platforms in the professional activity. The course can be also interesting to school students, entrants, potential freelancers and just by that who wishes to gain general idea about new communication opportunities of the environment of social media and basic skills of their use in the field of self-expression, communication, purchases and virtual mobility, education.

**Cost and conditions of participation**

The course is free. For participation it is necessary to be registered. Successfully mastered a course the opportunity of acquisition of the certificate of the Coursera platform is given. Placement of a course – according to the reference https://www.coursera.org/learn/sotsialnaya-set.

**Preparation level**

For passing of a course to listeners rather minimum possession of information computer technologies (at the level of the user of PC and popular social networks) and existence of basic knowledge (on level of proficiency in the general concepts) in the field of marketing, advertizing, social communications.

**2. The used technical means**

Personal computer, earphones/column, Internet access

**3. Special conditions and requirements of organizational, technical and technological character**

Requirements of organizational character: for studying of a course it is necessary to be registered on the Coursera platform (https://www.coursera.org) and to sign up for a course. The course is free.

Requirements of technical character: Windows (XP, Vista, 7, 10), the Internet browser (Google Chrome, Mozilla Firefox, IE8 above), Adobe Flash Player, the video card with a memory size from 512 MB, the sound card, earphones or columns.

**4. Conditions of transfer of documentation or its sale**

The National research Tomsk state university possesses an exclusive right to all materials of a course which are result of intellectual activity.

## ADVERTISING AND TECHNICAL DESCRIPTION "Report on carrying out a round table "Conflicts in the modern world and ways of their permission"

*Perm state national research university*

*Reutov S.I., Zamaraeva Z.P., Ivanova E.A., Popov D.V., Druzhinin M.S.*

*UDC 316.6*
*GRNTI 14.35.07, 14.35.09*

## 1. Functional purpose of development, scope, its restrictions

In student teaching of many highest and average special educational institutions several models of training are applied:

- passive. In this case the trainee acts as "object" of training.
- active. In this case the student acts already as "subject" of training. The teacher and the student act as active participants of the given classes.
- interactive. The concept "interactive" comes from English "il1teract" ("il1ter" - "mutual", - "to work" with "act").

Broader interpretation of the term – ability to interact or be in the dialogue mode.

The essence of an interactive method of training is traced, in our opinion, from the Chinese parable "tell me – and I will forget; show me – and I will remember; let's make – and I will understand". For this reason interactive training differs in the high level of mutually directed activity of subjects of interaction, allows to make the student the active participant of pedagogical process.

The interaction of students happening during interactive training is extremely a valuable resource of training. Interactive methods can be considered as the most modern form of active methods.

It is known that all higher education institutions of our country started realization of educational process now according to federal state educational standards of the third generation (FGOS) which essentially differ from the existing earlier educational standards. Thus, introduction of interactive forms of education – one of the most important directions of improvement of training of students in modern higher education institution.

Transition to competence-based approach at the organization of process of training provides wide use in educational process of active and interactive forms of carrying out occupations in combination with out-of-class work. At the same time the specific weight of the classes given in interactive forms in educational process has to make not less than 20 percent of classroom occupations.

In educational process of higher educational institutions of Russia the most various interactive forms of education can be used. In FGOS VPO among others such types of interactive methods of training as are called: business and role-playing games, round tables, group, scientific discussion, debate. From the given interactive methods of training are applied to students of the specialty "Social Work" and "Conflictology", generally the following forms: business and role-playing games, round tables, trainings, educational group discussions.

On April 17, 2016 at department of social work and conflictology of law department of PGNIU, under the leadership of the candidate of jurisprudence, the prof. S.I.Reutov, the assistant to department of social work and conflictology of law department E.A. Ivanova, the head of mediativny clinic at law department of PGNIU Popov D.V., the Chairman of the Perm Regional fund "Let's Help Children" Volkov A.V., there took place the meeting of the round table devoted to topical issues of the conflicts in the modern world and ways of their permission. Students of department of social work and conflictology of the Perm university, participants of Mediativny clinic at law department of PGNIU, and also students of Regional correspondence school of conflictology, pupils of 7-11 classes of Perm and Perm Krai became participants of a round table.

The conflicts were, is and will be. Usually people perceive the conflict as the negative phenomenon which it is necessary either to avoid, or to try to win over the rival, and therefore in consciousness of most of people there is the general approach to resolution of conflict "to win or lose". At conflict emergence the party at once begins to consider as the guilty person of the opponent. At settlement of dispute it is necessary to find out who is right and who is guilty. On

settlement of dispute the long time leaves, and the defeated party is, as a rule, dissatisfied with this decision.

Mediation as mediation is known since those times when people began to resolve the conflicts without the use of force and to conduct search of a compromise by means of the third party. Mediation as one of ways of alternative settlement of disputes is the effective instrument of finding of reasonable balance of interests of conflicting parties for prevention of judicial proceedings, for saving of time and money.

Development of conciliatory procedures is one of the priority directions of improvement of the mechanisms of settlement of disputes and protection of the violated rights of citizens existing in the Russian Federation.

Once again conference took place in a format of a round table, school and university students had an opportunity to participate in it - to make the scientific message. Performances of participants were devoted to socially important subjects.

On a round table 11 performances sounded. Work of conference was opened an opening speech of the prof. S by Reutov. I. The program was following:

| Name of the report | Students | Course |
|---|---|---|
| Application of elements of recovery technologies in the conditions of children's camp for the minors which are in the conflict with the law | Svizeva M. R. | 2 |
| Conflicts in sport and ways of their permission. | Druzhinin M. S. | 2 |
| | E.I's Kets. | 2 |
| Gaps in the Russian legislation in the questions concerning permission of cross-border disputes on children | Shatrova E.E.<br>Kayser A.O. | 4<br>2 |
| National ethnic conflicts and tasks of their prevention. | Malova E. A. | 2 |
| Modern world and topical issues of the social conflicts in the sports sphere. | Kochetov V.A. | 3 |
| Conciliatory procedures (mediation) in the sphere of the family relations. | Goreva L.A. | 2 |
| Value of mediation in life of people. | D. E's kites. | 8 class |
| Conflicts. Compromise. Mediation. | Predelina E.A. | 9 class |
| Conciliatory procedure of mediation | Ushakova A.E. | 9 class |
| About sport, you are the world! | Frolov I.V. | 10 class |
| The principles of mediation in my life. | Shevelyova A.A. | 9 class |

Purposes of carrying out a round table:

1. To be convinced that the conflicts very widespread phenomenon in the modern world.

2. To understand that in consciousness of most of people there is the general approach to resolution of conflict "to win or lose". A legal process of resolution of conflicts has, as a rule, long character. The defeated party in most cases remains dissatisfied with a judgment.

3. To mean that mediation is one of alternative ways of settlement of disputes.

4. To consolidate theoretical knowledge of the principles of carrying out procedure of mediation, legal status of a mediator.

5. To get acquainted with features of carrying out conciliatory procedures (mediation) in the sphere of the family relations, in the sphere of physical culture and sport, other spheres of the public relations.

6. To understand that mediation is one of the priority directions of improvement of the mechanisms of settlement of disputes and protection of the violated rights of citizens existing in the Russian Federation.

7. To be convinced that mediation is the effective instrument of finding of reasonable balance of interests of conflicting parties for prevention of judicial proceedings, for saving of time and money.

7. To find out the youth relation to conciliatory procedures (mediation).

8. To examine work of school services of reconciliation in Perm and Perm Krai.

9. To mean that it is more effective to resolve the family conflicts by means of conciliatory procedures (mediation) in a pre-judicial order.

10. Expansion of professional awareness of school and university students.

Experts at conference were:

A.V. Volkov is the CEO of Interregional institute of social and educational services

S. I. Reutov is professor of department of social work and conflictology of law department of the Perm state national research university

E.A. Ivanova is the assistant to department of social work and conflictology of law department of the Perm state national research university

D. V. Popov is the head of mediativny clinic at yuridicheskogy faculty of the Perm state national research university

On materials of conference the collection "Conflicts in the Modern World and Ways of Their Permission" devoted to the 25 anniversary of department of social work and conflictology is published.

Photos are attached to the report:

School and university students noted that the similar form of carrying out occupations is unusual and therefore is interesting

**2. The used technical means**

The report on carrying out a round table and the photo to it are created on the basis of the Microsoft Word program. Works under control of OC Windows 7. Hardware-software requirements: the COMPUTER type – Pentium IV, random access memory – 2048 MB, OS – Windows 7. Codak MPEG4.

**3. Special conditions of application and requirement of organizational, technical and technological character**

For work of the program there is no need for special conditions of application and requirements of organizational, technical and technological character.

**4. Conditions of transfer of program documentation or its sale are solved directly with authors**

Conditions of transfer of program documentation or its sale are solved directly with authors. Now PGNIU????

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## ADVERTISING AND TECHNICAL DESCRIPTION "Remote course "Express course: 2D+3D design in AutoCAD" (15.03.05 – Design-technology providing mechanical productions, level – a bachelor degree)"

*Federal public budgetary educational institution of the higher education "Omsk state technical university"*
*Kajgorodceva N.V., Luzgina V.B.*

***UDC** 378*
***GRNTI** 14.35.07, 81.14.10, 50.51.17, 50.51.02*

**1. Functional purpose of the program, scope, its restrictions**

Remote course "Express course: 2D+3D design in AutoCAD" it is developed for beginners therefore will suit the pupils of the senior classes and students who are fond of equipment and dreaming to become engineers. It will be also interesting to experts of a technical and architectural and construction profile, and also teachers of technical disciplines of the highest and specialized secondary educational institutions.

Process of creation of drawings in engineering and architectural and construction activity is completely realized in special graphic software packages. The AutoCAD program – the multipurpose software product realizing 2D - and 3D - technologies of submission of projects and inventions practically any field of activity.

This course will help to seize for a short time skills of work in AutoCAD, both in 2D - and in 3D - computer space. Repeating the exercises presented in video lessons to end of a course listeners will be able independently to create a 3D model and its associative drawing which will be automatically corrected at change of a 3D model.

Main sections of a remote course "Express course: 2D+3D design in AutoCAD":

1. Work bases in the AutoCAD program – 2,7 GB
2. Bases 2D - design in AutoCAD – 3,14 GB
3. Additional teams. Creation of an isometric projection – 1,2 GB.
4. Work with layers: creation of an assembly drawing – 1,13 GB.
5. Bases 3D - modeling in AutoCAD – 1,5 GB.
6. The main teams of editing 3D - objects. Creation of the associative drawing – 1,38 GB.

Total: 11, 05 GB.

The course contains a trailer, 56 videurok, 5 tests and 5 tasks for implementation of drawings.

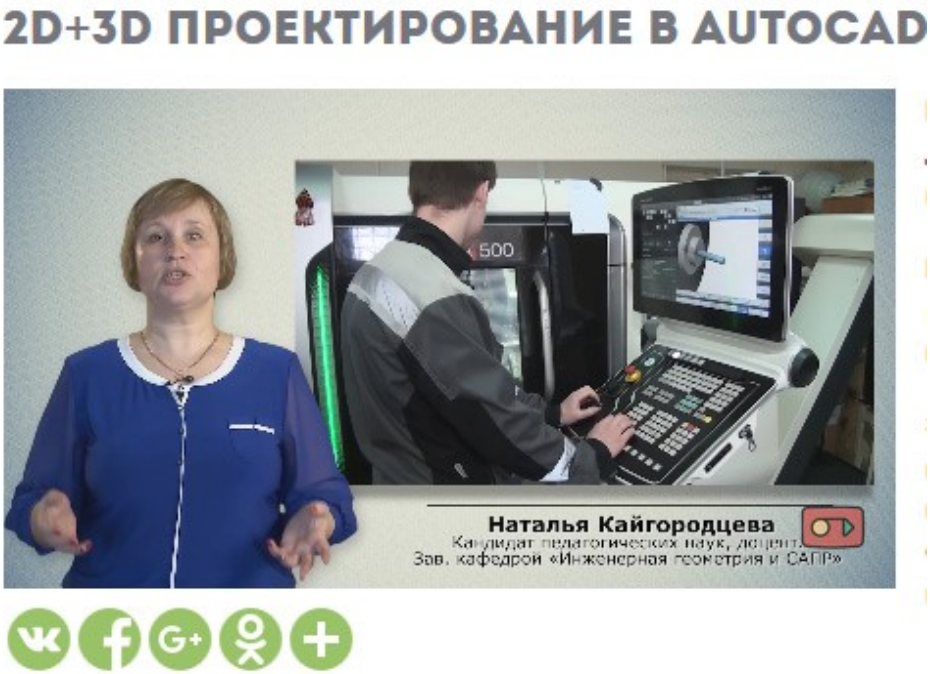



Fig. 1. Course trailer

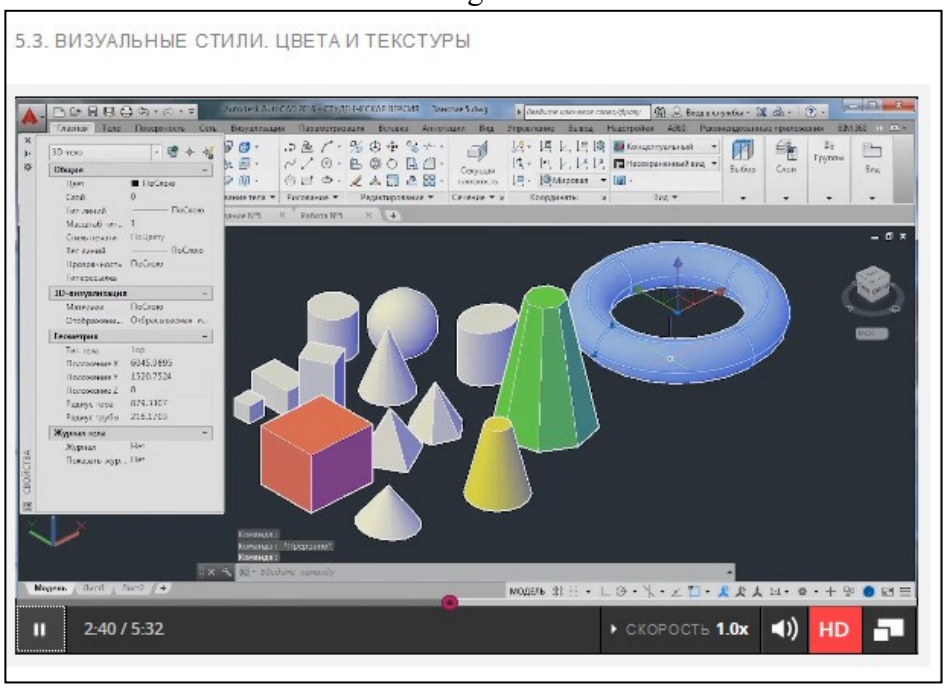



Fig. 2. Video lesson of a remote course

Fig. 3. Example of test questions of a course

When developing a remote course programs were used:

iSpring Suite 8;

Adobe Premiere Pro;

Adobe After Effects.

Video lessons are placed on Youtube channel. The remote course is placed on a platform Lektorium and is available according to the reference https://www.lektorium.tv/mooc2/27403.

The multimedia course is approved in Omsk the state technical university on courses in scientifically educational center in Autodesk-OMGT.

**2. The used technical means**

2.1. For development of a remote course "the Express course: 2D+3D design in AutoCAD" the following equipment rooms and software are necessary:

1. Computer and AMD Phenom (tm) II processor.
2. Random access memory – 4096 MB.
3. Summary space on the hard drive of 1024 MB.
4. Color SVGA monitor of the computer resolution 1024x768 and above.
5. Operating system: Windows 7.
6. iSpring Suite 8.
7. Adobe Premiere Pro.
8. Adobe After Effects.

2.2. For functioning of a multimedia course "the Express course: 2D+3D design in AutoCAD" the following equipment rooms and software are necessary:

For viewing on the computer:

Computer and Intel/AMD processor of 1 GHz or above.

Random access memory – 1024 MV.

Free space on the hard drive of 1024 MB.

Color SVGA monitor of the computer resolution 1024x768 and above.

Operating system: Windows XP/Vista/7/8, Macintosh, Linux.

Software: Internet Explorer 6 above, Mozilla Firefox 3.x above, Safari 3 above, Google Chrome, Opera 9.5 above.

**3. Special conditions of application and requirement of organizational, technical and technological character**

Remote course "Express course: 2D+3D design in AutoCAD" is the mass course opened online. It is placed on an Internet platform Lektorium and is available to free training in everyone after registration according to the schedule of starts of a course.

**4. Conditions of transfer and sale of program documentation**

Exclusive right to a remote course "Express course: 2D+3D design in AutoCAD" belongs to OMGTU. LLC Lektorium has the right for publication of a course on the website, the right for reproduction, for public display, for processing and informing everyone. These rights to the third parties are not transferred.

## ADVERTISING AND TECHNICAL DESCRIPTION "Program of Formation of the Knowledge Base for the Solution of a Task " Design of Drilling Mud Fluid"

*Panteleev A.S.*

***UDC*** *006.065:658.62.018.012*
***GRNTI*** *84.13.53, 52.01.81, 52.47.15*

**1. Functional purpose of a product, scope, its restrictions**

The Drilling Mud Fluid (DMF) represents multicomponent system with very wide range of variations, both qualitative, and quantitative indices of structure depending on a number of exogenous factors (pressure, temperature, drilling depth, rock, etc.).

The choice of the component structure defining in turn properties and a functional purpose of BR represents a multicriteria task (in some cases criteria are interdependent), which complexity of the decision is well-known.

Feature of the considered task consists in the high level of uncertainty of basic data and dependences. In practice at the solution of the choice of composition of drilling mud fluid for effective management of drilling process experts rely on the available experience, on similarity of the considered task with similar which met earlier. From similarity of conditions the conclusion about analogousness of decisions is drawn. In view of the high level of uncertainty, the decision on the choice of composition of drilling mud fluid are not only. Therefore application of technologies of the artificial intelligence (AI) which characteristics are is preferable to formalization of decision-making process:

- use of information in a symbolical form (words, signs, drawings) that qualitatively differs from traditional data presentation in a numerical form;
- choice existence, i.e. not determinism that reflects freedom of action, a significant component of intelligence.

Not determinism which is shown in need of the choice between many options in the conditions of uncertainty has fundamental character. As experience of the person of the making decision (PMD) forms a basis for decision-making, from the AI technologies the technology of the expert systems (ES) more is suitable for the solution of an objective.

In this regard in the real work an attempt of use of expert information with creation of the corresponding databases (D) and knowledge bases (KB) is made. The information (received directly by one of authors) on conducting of a well of the Luginetsky field located in Parabelsky district of the Tomsk region, and also taken from the published sources of scientific and technical literature of other authors was the basis for a DB: on indicators of process of drilling [8],[10], on properties of boring solutions [1],[7].

Technique of formation of the knowledge base "design of drilling mud fluid".

The analysis of methodology of creation of expert systems of the choice of priority projects of exploration on oil and gas showed that for the solution of an objective it is expedient to use similar structure of ES in [4], and as model of the knowledge base to elect productional system.

For working off of a technique of formation of BZ the DB containing classification of BR [2], mining-and-geological breeds, data and parameters of these breeds [3], information on functions, properties, structures, BR reagents and interaction with each other [5] was constructed. Possible complications and ways of their elimination and further prevention are given in a DB [6]. The DB which is also allowing to estimate:

- range of breeds from loams and clays to quartz breeds and dzhespilit (evaluation criterion the hardness and the general geological similarities);
- range of high pressures and temperatures (VDVT)> 2600 C and> 241 MPas (with a step of 100 C and 0,1 MPas);
- range of drilling is from 0 to 8 000 m (with a step of 500 m).

At design of model of representation of knowledge it is necessary to consider such factors as uniformity of representation and simplicity of understanding. Uniform representation leads to simplification of the mechanism of management of a logical conclusion and simplification of management of knowledge. However to fulfill this requirement equally, both for simple, and for complex challenges (as design of BR) it is quite difficult. For the solution of simple tasks (for example, for problems of educational character) stop on some average

(compromise) representation; structuring and modular representation are necessary for the solution of complex challenges of big dimension (research and production).

Expert systems are intended for the solution of plokhoformalizuyemy tasks. But in too time expert systems do not reject and do not replace traditional approach to development of the programs focused on the solution of the formalized tasks. At the same time ES supplement them, thereby considerably expanding opportunities. ES can be interpreted as the systems uniting the advanced know-how, and acquaintance and/or their application at the solution of specific objectives promotes professional development [4].

Knowledge differs from data and information in existence of structure. Models of knowledge on which use knowledge bases are under construction are very various: productional systems, frames, semantic networks, logic of predicates, fuzzy logic. The productional model in which procedures represent a set of rules of type is most widespread

*IF (condition), THEN (action),*

and the operating structure defines what rule has to be checked by the following.

If the facts entering into conditional part of the rule accept truth value, then A V operation is performed→. If the statement like "if And, In" is true, from the validity And (true) it is necessary V. No's validity in a case when And - it is false (false) follows, it is impossible to judge the validity of Century. Therefore for a case if And - it is false also at any values B, the statement is true

Operation which is made according to productional model call operation of logical following, or the operation "implication".

The example of conditional part is presented in table 1 and speak rapidly "action" for the productional rule. At the same time arguments (factors) entering into conditional part can be united by logical operation "I" (it is designated by a comma) or the logical operation "OR". Considering that for value of the X6 and X26 variables alternative values are possible, in values of function ("action") are alternative (line in tablitse1).

Rules are a basis of BZ which structure is presented in the form of the AND/OR type. Such type of columns often call the count of subject domain. In the case under consideration it is formed the columns "design of BR" (fig. 1).

Columns of subject domain always have big dimension therefore the simplified option of the count was given in fig. 1. Also for simplification mathematical designations of conditions and actions were omitted, and at the head of the count the DB (based on experience of experts) is put. The count is divided into 4 columns which characterize 4 most significant groups of rocks, these are clay breeds, hemogenny breeds, breeds of productive layers and strong steady breeds.

Table 1. Example of "mathematical" record of part

| **Breeds** | **Xi** | **Parameters** | | **Breeds** | **X2i** | **Parameters** |
|---|---|---|---|---|---|---|
| **Clay part 1** | X1 | ≤1,7 g/cm3 { hl density. Breeds } | | **Clay part 2** | X21 | ≤1,71-1,8 g/cm3 { hl density. Breeds } |
| | X2 | <400 m {depth} | | | X22 | <700 m {depth} |
| | X3 | > 30% { koef. porosity } | | | X23 | > 30% { koef. porosity } |
| | X4 | <5 g/l { mineralization of steam water } | | | X24 | <5 g/l { mineralization of steam water } |

| | | | | | | |
|---|---|---|---|---|---|---|
| | X5 | > 44 { volume capacity, mg ekv. on 100 g } | | | X25 | > 44 { volume capacity, mg ekv. on 100 g } |
| | X6 | BR { look 1. Type 2.2.2; 2.2.4; 2.2.6 } | | | X26 | BR { look 1. Type 2.2.2; 2.2.4; 2.2.6 } |
| | F=F3 | { otl-F1, och chorus - F4, chorus - F3, is bad - F2, is hopeless - F1 } | | | F=F1 | { otl-F1, och chorus - F4, chorus - F3, is bad - F2, is hopeless - F1 } |

In turn in each column there is the subsequent crushing on parameters of rocks, the characteristic of breeds, concrete types of hemogenny breeds and td.

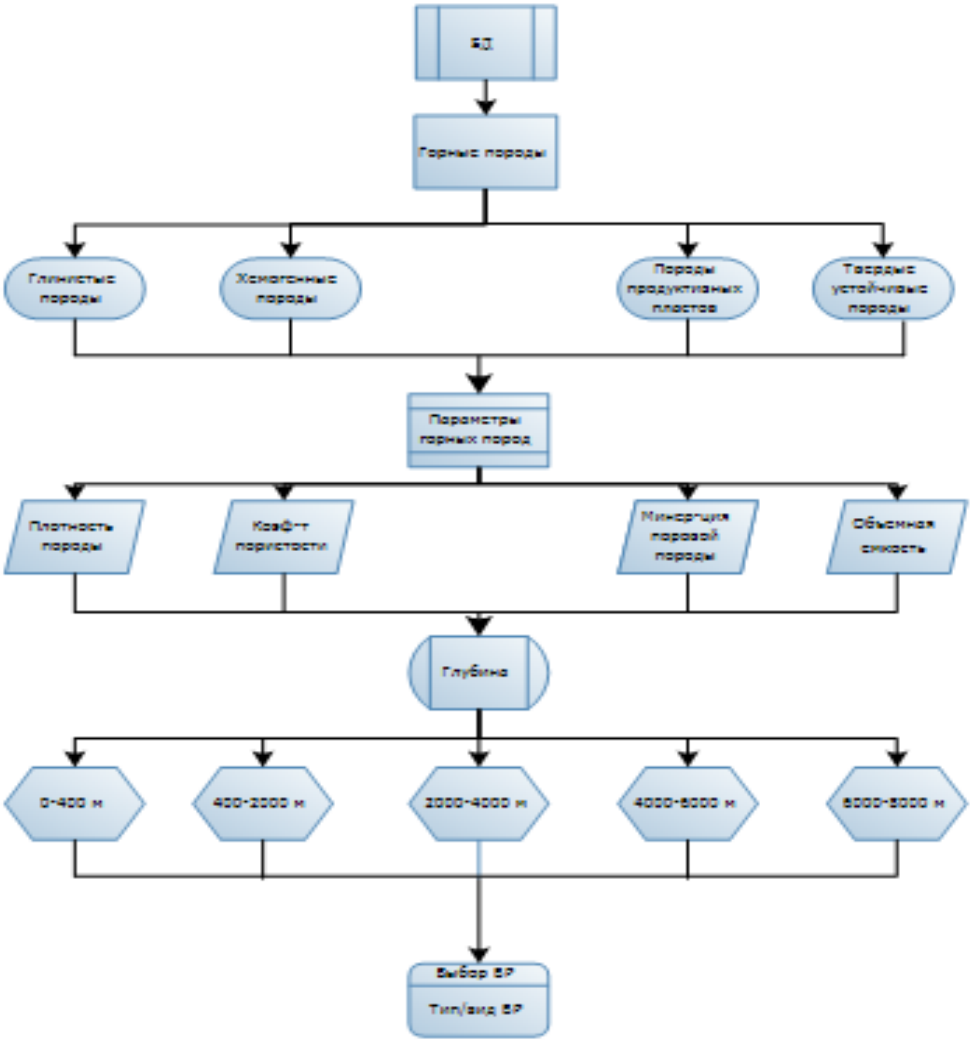



Fig. 1 "The simplified type of the count

Let's consider the main stages of work with the count of subject domain. As rules consist of conditional and final parts, and the conditional part is connected by logical function I or OR, any rule can be submitted the count where on lower level located "hubs conditions", and at the top level – "knot conclusion". The mechanism of a logical conclusion is a strategy of search of the decision on the column of a logical conclusion (the mechanism of the choice of the corresponding rule from a conflict set). A conflict set - a set of rules which can be applied at a

concrete stage of a logical conclusion. The classical algorithm of work with the count of subject domain during the work of ES consists in search of coincidence of conditions of the purpose to conditional part of rules BZ. Search is run on strategy "from top to down" and "at the left - to the right".

The rules stated above it is applicable to (fig. 2).

- Obtaining necessary mining-and-geological information.
- Comparison of the obtained information with classification in the database and transition to the II step.
- At the II step there is a direction on one of 4 significant groups of "rocks" (depending on basic data).
- After the group of "rock" is defined, the count directs to the III step where there is a division into "parameters of rocks", depending on that to what group of "rocks" we got.
- Having determined "rock parameters" the count directs to the IV step which where there is a distribution depending on drilling depth.
- Having received depth of drilling, the count directs "a type/type of BR" to the last V step and makes recommendations about use of concrete BR.

For the best understanding of work of the count, we will review an example with concrete basic data. Having obtained the following information:

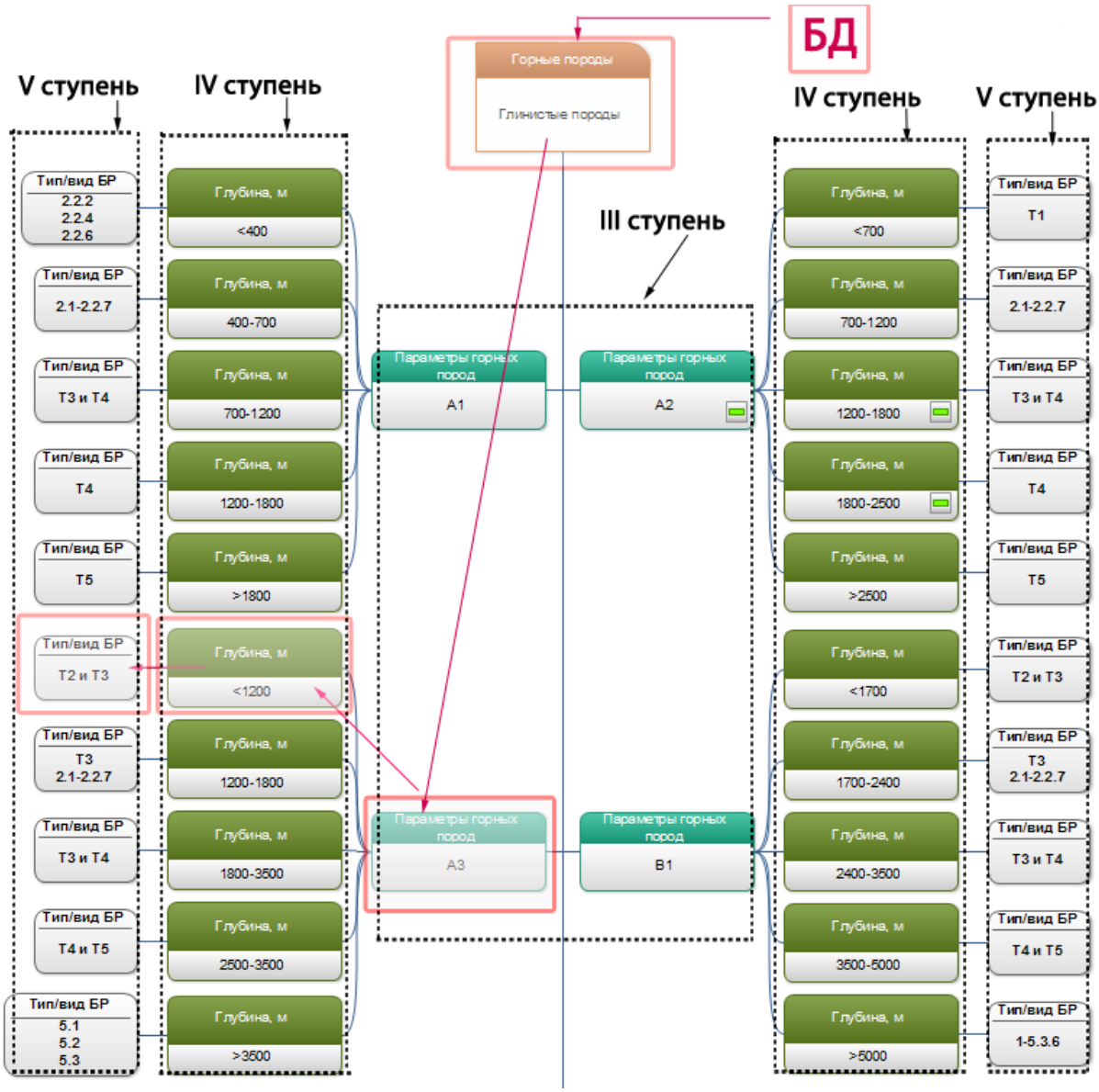
Breed type – clay
Breed density – 1,81-1,90 g/cm3
Depth - <1200 m
Koef. porosity –> 30%
Mineralization of steam breed – <5 g/l
Volume capacity, mg ekv. on 100 g> 44

we receive the I step. Proceeding from a step of I and initial information, we receive a step of II (concrete rock, in given a case clay). Knowing data on rock parameter (density of breed of 1,81-1,90 g/cm3, porosity coefficient> of 30%, a mineralization of steam breed <5 g/l, volume capacity (mg ekv. on 100 g)> 44) we pass to a step of III. Proceeding from parameters of rock and knowing drilling depth (in our case <1200 m) we receive a step of IV. Having received depth of drilling we pass to the last step of V and we make recommendations about the BR concrete type / look (in our case of T2 and T3). The scheme of algorithm is given in fig. 2.

Fig. 2 Principle of Work of the Count

The technique of formation of the knowledge base for the solution of a task "Design of drilling mud fluid" is offered.

Creation of the special software for formation of BZ is planned. BZ is planned to be added with the component analysis and the analysis of the BR chemical reagents for the purpose of establishment of communications for prevention of emergencies. All this will allow to




influence quality management of drilling mud fluid directly. The received results are supposed to be used as well in the educational purposes, for training of engineers-drillers and receiving initial experience with BR.

Opportunities for creation of ES of management of BR depending on mining-and-geological conditions, and formations of the program for training of experts open.

**2. The used technical means**

System requirements: IBM PC, Intel, 500 MHz; 524 Mb RAM; an empty seat on HDD of 524288 KB; Windows XP above; mouse. Development volume – 629 KB.

**3. Special conditions and requirements of organizational, technical and technological character**

No.

**4. Conditions of transfer of documentation or its sale**

Distribution is possible on the basis of the contract with the author.

**Literature**


1. Abramson M. G., etc. Reference book on mechanical and abrasive properties of rocks of oil and gas fields. - M: Subsoil of 1984-207 pages.
2. Damask steels A. And., Avetisov A. G. Reference book of the engineer on drilling: In 3 t.: 2nd prod., reslave. and additional - M.: Subsoil, 1993-1995. T 1-3.
3. Damask steels A. And., Penkov A. I., Country roads Yu. M. Reference book on washing of wells. – M.: Subsoil, 1984. 317 pages.
4. Grigoriev L.I., Arabadzhi M. S., Gasymov I.T. Expert systems and their application (on the example of oil and gas geology). – M: IRTs "Gazprom", 1993. – 69 pages.
5. Eremenko N. A. "Geology of oil and gas" M.: Subsoil, 1984. 480 with

Iogansen K. V. Companion of the driller: Reference book. - the 3rd prod., reslave. and additional - M.: Subsoil, 1990. - 303 pages.

6. Kalinin, A.G. Practical guidance on technology of drilling of wells on liquid and gaseous minerals [Text]: handbook / A.G. Kalinin, A.Z. Levitsky, A.G. Messer, N. V. Solovyov; under a general edition of A.G. Kalinin. – M.: LLC Nedra-Businesstsentr, 2001.
7. Leonov E.G., Isaev of V. I. Gidromekhanik in drilling. - M.: Subsoil, 1987-304 pages.
8. Paus K.F. Boring flushing liquids. M of a.:nedr, 1967. – 300 pages.
9. RD 39-0148070-6.027-86. The instruction for drilling of inclined wells from well pads on oil fields of Western Siberia. - Tyumen: SIBNIINP, 1986. - 138 pages.


## ADVERTISING AND TECHNICAL DESCRIPTION "Remote Training Course " Judicial Economic Examination" (the direction of preparation of XX.XX.XX - Economic security)"


*Federal public budgetary educational institution of the higher education "Ryazan state radio engineering university"*

*Skripkina O.V.*



***UDC** 378*

***GRNTI** 14.35.07, 06.71.00*


**1 Functional purpose, scope, its restrictions**

The remote course "Judicial Economic Examination" is intended for formation at trained knowledge in the field of production of judicial accounting, financial and economic and other types of economic examinations as instruments of establishment and proof of the actual circumstances by hearing of cases in civil, administrative, criminal, constitutional legal proceedings connected with economic offenses and crimes.

Process of studying of a course is directed to formation at students of common cultural, all-professional and professional competences:

| Codes competences | Contents competences | The list of the planned results of training in discipline |
|---|---|---|
| OK-7 | Ability to logical | Nobility: receptions and ways of selection |

| Codes competences | Contents competences | The list of the planned results of training in discipline |
|---|---|---|
| | thinking, the analysis, systematization, generalization, critical judgment of information, logically truly, it is reasoned and to clearly build oral and written language, to conduct polemic and discussions | of information in the sphere of professional activity.<br>To be able: to systematize and structure necessary information for formation of resource and information base for the solution of professional tasks.<br>To own: in the ways of use of information base for the solution of professional tasks. |
| PK-37 | Ability to use knowledge of theoretical, methodical, procedural and organizational bases of judicial examination by production of judicial economic examinations and researches | Nobility: ways and methods of judicial economic examination by hearing of cases in civil, administrative, criminal legal proceedings;<br>- contents of the normative legal acts regulating the bases and an order of appointment and production of judicial economic examinations.<br>To be able: to process procedural documents, necessary for production of examination;<br>- to competently formulate the questions submitted for consideration of examination.<br>To own: □ by methods of interaction of investigative and judicial workers with experts, developments of criteria for evaluation of the expert opinion, as well as a technique of work with documents – carriers of economic information which can become proofs on business. |
| PK-38 | Ability to apply techniques of judicial economic expert researches in professional activity | Nobility: scientific bases of the organization and carrying out accounting, economical, judicial and accounting examinations, definitions of a circle of questions which can be put before experts;<br>- methods of research of documents when carrying out judicial economic examination.<br>To be able: to apply techniques of judicial economic expert researches in professional activity.<br>To own: a technique of judicial economic expert researches in professional activity. |
| PK-39 | Ability to carry out economic examination of regulations for detection of potential threats of economic security | Nobility: potential threats of economic security.<br>To be able: to carry out economic examination of regulations for detection of potential threats of economic security.<br>To own: techniques of economic examination of regulations for detection of potential threats of economic security. |

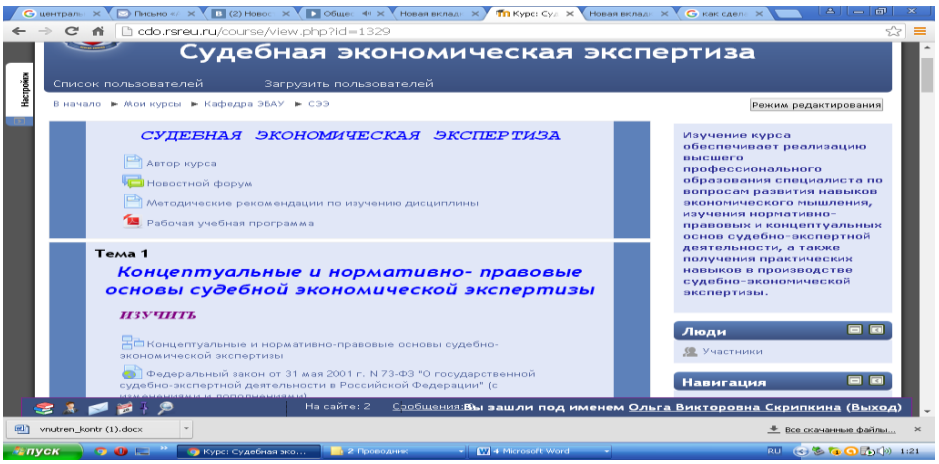


Fig. 1 Main page of a remote training course

The developed remote training course has modular structure. Each module represents the finished fragment with the didactic task directed to formation at students of certain professional competences.

Application of competence-based approach allows to concretize the maintenance of modules of a remote course taking into account the main activities of the teacher in system of distance learning. Modules of a course contain the theoretical, practical and controlling materials directed to a sformirovaniye at listeners of the professional competences necessary for application of a technique of judicial economic expert researches in professional activity.

Listeners are provided with a set of electronic educational and methodical and reference materials, detailed instructions and methodical recommendations.

When developing materials of a remote course the basic principle of development of remote training courses – the most complete and evident idea of a training material providing them independent studying at individual speed and also creation of enough the internal and external relations allowing to organize effective and fast access for the trainee to necessary information was considered.

The program of a course has a practical focus. Listeners master skills of work with Internet resources, to demoversions of software products.

**2. Structure and conditions of application**

The remote training course "Judicial economic examination" consists of 13 modules and has the following structure:

Introduction module

Subject 1. Conceptual and standard legal bases of judicial economic examination

Subject 2. Technique of judicial economic examination

Subject 3. Order of appointment and production of judicial economic examination

Subject 4. Research stage of judicial economic examination

Subject 5. Conclusion of judicial economic examination, its assessment and use

Subject 6. Responsibility for economic and tax offenses

Subject 7. Expert research of operations with money

Subject 8. Expert research of operations with material and production stocks

Subject 9. Expert research of operations on compensation

Subject 10. Expert research of operations on formation of financial result

Subject 11. Expert research deliberate (fictitious) bankruptcy

Help module

Final module

Information resources and interactive elements – theoretical materials, practical tasks, workbooks, glossaries, tests, references to Internet resources are a part of each module.

As basic tools for development of a remote course freely extended software package of Moodle representing a learning management system in the electronic environment is used. This system was designed according to requirements of modern pedagogics and for level of the given

opportunities bears comparison with the known commercial systems owing to what proved from a positive side in a number of foreign and Russian higher education institutions.

Educational and methodical materials of a remote course are presented in the form of files of various formats supported by Moodle (text and web pages, references to files (*.pdf, *.doc, *.ppt, *.gif, *.jpg, etc.), catalogs, archives (*.zip), audio and video files (*.mp3, *.swf, *.avi, *.mpg, *.flv, etc.), animation rollers, references to resources the Internet, etc.

Resources of a course can be studied directly on the computer, or to keep on the local computer for the press and further acquaintance. Interactive elements (workbooks, tasks of various types, glossaries (dictionaries at the rate), forums, chats, polls, tests) allow to focus attention of listeners on separate fragments of the studied material, to check the level of knowledge, to organize interaction of listeners with each other and with the teacher.

For work with a remote course it is recommended to use the Mozilla Firefox browser as when using other browsers correct work of the website of distance learning is not guaranteed.

The remote training course "Judicial economic examination" is approved on the basis of the Ryazan state radio engineering university. The course can be used for support of training in internal and remote forms, and also the mixed form which combines classroom occupations with elements of distance learning.

3. The used technical means

Requirements to the personal computer of the user for work with a remote training course are presented in the table.

| | Office | |
|---|---|---|
| | At least | Optimum |
| Case (power supply unit) | Mini/Midi Tower of 350 W | Mini/Midi Tower of 350 W |
| Maternal payment (chipset) | AMD 740G + SB700 (CPU AMD),<br>NVIDIA GeForce 8200 (CPU AMD)<br>or Intel G41 + ICH7 (CPU Intel) | AMD 740G + SB710 (CPU AMD),<br>NVIDIA GeForce 8200 (CPU AMD)<br>or Intel G41 + ICH7 (CPU Intel) |
| CCP | AMD Athlon II X2 240 or<br>Intel Pentium Dual-Core E2180 | AMD Athlon II X2 255 or<br>Intel Pentium Dual-Core E5300 |
| RAM | 2 GB DDR2 800 (2□1 GB) | 2 GB DDR2 800 (2□1 GB) |
| Hard drive (HDD) | SATA 250 GB, 7200 rpm | SATA 500 GB, 7200 rpm |
| Network, audio- and graphic (video) of a payment | integrated | integrated |

Work with a remote course requires existence of connection of the computer of the user to the Internet and access to the server of system of distance learning of higher education institution on which this course is placed.

4. Conditions of transfer and sale of program documentation

Distribution and use of a remote training course "Judicial economic examination" can be carried out only with the consent of authors.

Reference to a course: Duk_sudebny economic examination

The course can be transferred to the interested person or the organization on the basis of the contract according to the current legislation.

Concerning acquisition it is possible to address in FGBOOU WAUGH "The Ryazan state radio engineering university".

Address: 390005, Ryazan Gagarin St., 59/1

Phone: 4912) 46-04-37

E-mail: cdo@.rsreu.ru

# ADVERTISING AND TECHNICAL DESCRIPTION "Calculation of Probability of Identification of Chains of Markov Rabiner's by Method (napravleniye:162500 Technical Operation of Aviation Electrical Systems and Flight and Navigation Complexes)"

*Nurutdinova A.R.*

***UDC** 37:002*
***GRNTI** 14.01.29, 20.01.45*

**1. Functional purpose of a product, scope, its restrictions**.

In systems of an aviation radar-location, in systems of recognition of texts, casual signals broad application is found by various analytical models, such as the hidden Markov's chain (MC) [1]. In this connection problems of identification of the sequences described by final simple uniform TsM [2] are of interest. The specified approach, in particular, is applicable for processing of digital sequences of the signals bearing information on location of the aircraft. Including, sequences in which the part of elements is hidden from supervision.

The program of identification of the final simple uniform TsM generated on the basis of stochastic matrixes of a class of ergodic (ESM) with use of modification of the model offered in [1] is offered. In particular, the specified TsM generated both on the basis of certain ESM, and on the basis of ESM of the set subclasses. Besides, by means of the program the problem of identification of final simple uniform TsM which part of elements is hidden from supervision can be solved.

The program has practical value during the studying and the solution of problems of recognition of casual processes, recognitions of casual signals and texts. It can be used by the students, graduate students, teachers researching in the field of recognition of signals, casual processes.

The "Calculation of Probability of Identification of Chains of Markov Rabiner's by Method" program is intended for identification of Markov automatic machines by means of the modified Rabiner's method. Markov automatic machines are set on the basis of ergodic stochastic matrixes which belong to the set subclass. The program allows to define probability of reference to the set subclass. The program is realized on the basis of algorithm direct - reverse motion of Rabiner for identification of sequences of TsM and sequences which part of elements is hidden from supervision.

According to [2], final simple uniform TsM are defined according to expression:

$$(S, P_{(m)}, \pi_0), \qquad 1)$$

where $S = \{s_1, s_2, ..., s_m\}$ - final set of its states, $P_{(m)}$ – stochastic matrix (SM) of the mm size×, $\pi_0 = \{\pi_i\}$, $i = \overline{1, m}$ – *the m-dimensional* stochastic vector setting initial distribution of probabilities of states.

We will call the Automatic Markov Model (AMM) the independent probabilistic automatic machine of a look [3, 4]:

$$A = (\hat{\mu}, S, \delta(x, s)). \qquad 2)$$

The AMM task in the form of (2) is equivalent to a task of final simple uniform TsM of a look (1): *S* - the same object, as in (1), $\hat{\mu}$ – the discrete random variable accepting final number of values $\mu_1, \mu_2, ..., \mu_l$ on *A* entrance with probabilities $p_1, p_2, ..., p_l$, $\sum_{i=1}^{l} p_i = 1$, $0 \le p_i \le l$,

$\delta(x,s)$ – the function of transitions putting in compliance to couple $(x,s)$ unambiguously new state $s' \in S$ and for which a set of values $\{x_i\} = X = \{\mu_i\}$, $i = \overline{1,l}$.

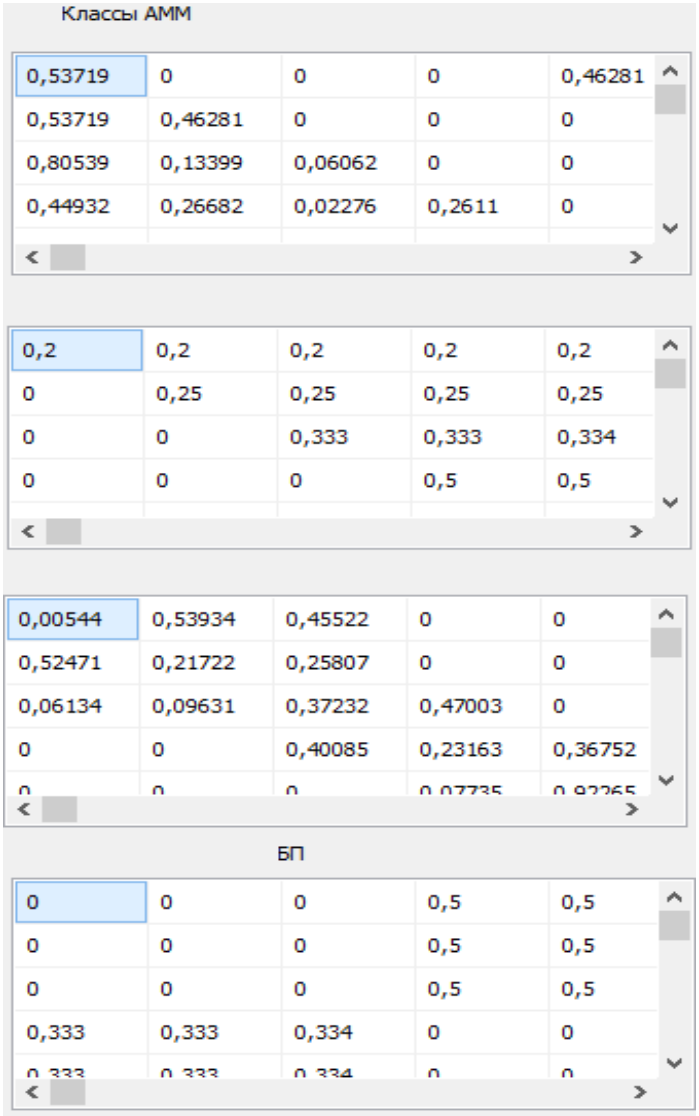
The sequence of conditions of AMM of a look (2) is the simple uniform TsM of a look (1) determined by a stochastic matrix *P* which is calculated on a formula [3]

$$P = \sum_{k=1}^{l} p_k M(x_k),$$

where coefficients $p_1, p_2, \ldots, p_l$ form a stochastic vector $\overline{P}$, $M(x_k)$ - the simple matrix corresponding to a letter $x_k$. Matrix elements $M(x_k)$, we will designate them through $\pi_{ij}(x_k)$, $i, j = \overline{1,m}$, are defined from a ratio [5]

$$\pi_{ij}(x_k) = \begin{cases} 1: & \delta(x_k, s_i) = s_j, \\ 0: & \delta(x_k, s_i) \neq s_j, \quad i, j = \overline{1,m} \end{cases}.$$

$\hat{S}(N)$ – Length TsM *N* look $\hat{S}(N) = s(1)s(2)\ldots s(N)$, $s(t)$ – a condition of AMM of a look (2) in *t* timepoint, $t = \overline{1,N}$. $AMM(P)$ – the automatic Markov model of a look (2) set on the basis of ESM *P*. The set subclass of ESM is defined on the basis of existence of zero values of its certain elements [7]. For example, the subclass of the top triangular matrixes assumes existence of zero elements from below from the main diagonal except for the element which is with *m-y* to a line of the first column [7]. Input of the set classes is carried out by reading from the file with data of classes the choice of a menu item "To define classes AMM". An example of classes in figure 1.



Классы АММ

| | | | | |
|---|---|---|---|---|
| 0,53719 | 0 | 0 | 0 | 0,46281 |
| 0,53719 | 0,46281 | 0 | 0 | 0 |
| 0,80539 | 0,13399 | 0,06062 | 0 | 0 |
| 0,44932 | 0,26682 | 0,02276 | 0,2611 | 0 |

| | | | | |
|---|---|---|---|---|
| 0,2 | 0,2 | 0,2 | 0,2 | 0,2 |
| 0 | 0,25 | 0,25 | 0,25 | 0,25 |
| 0 | 0 | 0,333 | 0,333 | 0,334 |
| 0 | 0 | 0 | 0,5 | 0,5 |

| | | | | |
|---|---|---|---|---|
| 0,00544 | 0,53934 | 0,45522 | 0 | 0 |
| 0,52471 | 0,21722 | 0,25807 | 0 | 0 |
| 0,06134 | 0,09631 | 0,37232 | 0,47003 | 0 |
| 0 | 0 | 0,40085 | 0,23163 | 0,36752 |
| 0 | 0 | 0 | 0,07735 | 0,92265 |

БП

| | | | | |
|---|---|---|---|---|
| 0 | 0 | 0 | 0,5 | 0,5 |
| 0 | 0 | 0 | 0,5 | 0,5 |
| 0 | 0 | 0 | 0,5 | 0,5 |
| 0,333 | 0,333 | 0,334 | 0 | 0 |
| 0,333 | 0,333 | 0,334 | 0 | 0 |

Fig. 1. Example of classes of recognition

$\hat{S}_k(N)$ – TsM of length *of N*, look similar $\hat{S}(N)$, for which there are *k* of timepoints, $k < N$, in which states $s(t)$ are hidden from supervision.

For calculation of probability, it is necessary to enter dimension of ESM P - m and length of sequence of N.

The studied sequences can is entered from the file or directly manually the choice of a menu item "To open sequence".

The algorithm which is the cornerstone of the program.

For identification of sequence $\hat{S}(N) = s(1)s(2)...s(N)$ the massif of variables is entered:

$$\alpha_t(i) = P(s(1)s(2)...s(t), s(t) = s_i \mid AMM(P)), \quad t = \overline{1,N}, \quad i = \overline{1,m},$$

which allow to define probability that AMM(P) by the time of time *of t* generates sequence $\hat{S}(t) = s(1)s(2)...s(t)$ and in a timepoint *of t AMM(P)* is in a state $s_i$.

We find values $\alpha_t(i)$, $t = \overline{1,N}$, $i = \overline{1,m}$, an induction method on the algorithm created on the basis of modification of algorithm of the forward stroke offered in [1] for the hidden TsM. The algorithm includes three stages.

Stage 1. Initialization: $\alpha_1(i) = \pi_0(i) \cdot z_i$, $i = \overline{1,m}$, $z_i = \begin{cases} 1: & s(t+1) = s_j \\ 0: & иначе \end{cases}$.

Stage 2. Induction: $\alpha_{t+1}(j) = \left[\sum_{i=1}^{m} \alpha_t(i) \cdot p_{ij}\right] \cdot z_j$, $t = \overline{1, N-1}$, $j = \overline{1,m}$.

Stage 3. We find $P(\hat{S}(N) \mid AMM(P)) = \alpha_N(s(N))$.

For identification of sequence which $k$ of states is hidden from supervision – $\hat{S}_k(N)$ when performing a stage 2 calculations of values $\alpha_{t+1}(i)$, $t = \overline{1, N-1}$, $i = \overline{1,m}$, expression takes place:

$$\alpha_{t+1}(j) = \left[\sum_{i=1}^{n} \alpha_t(i) \cdot p_{ij}\right] \cdot z'_j, \quad z'_j = \begin{cases} 1: & s(t+1) - \text{скрыто} \\ z_j: & \text{иначе} \end{cases}.$$

Besides, if $s(N)$ it is hidden from supervision, probability $P(\hat{S}_k(N) \mid AMM(P)) = \sum_{i=1}^{m} \alpha_N(i)$.

Computing complexity of receiving the specified probability – $(m-1)$ addition operation.

Example:

Let dimension ESM $P$ be set $m = 3$. $R$ has the maximum entropy and defines AMM(P):

$$P = \begin{pmatrix} 0,(3) & 0,(3) & 0,(3) \\ 0 & 0,5 & 0,5 \\ 0,5 & 0 & 0,5 \end{pmatrix}, \qquad \pi_0(i) = 0,(3), \qquad i = \overline{1,3}.$$

The first sequence is defined completely: $\hat{S}(4) = s_1 s_3 s_2 s_1$.

According to the offered algorithm, $\alpha_1 = (0,(3) \quad 0 \quad 0)$, $\alpha_2 = (0 \quad 0 \quad 0,(1))$, $\alpha_3 = (0 \quad 0 \quad 0)$, $\alpha_4 = (0 \quad 0 \quad 0)$. As a result $P(\hat{S}(4) \mid AMM(P)) = 0$. This result allows to make the conclusion that the first sequence cannot be generated on the basis of the set AMM(P).

The second sequence is defined completely: $\hat{S}(4) = s_1 s_2 s_3 s_1$.

According to algorithm $\alpha_1 = (0,(3) \quad 0 \quad 0)$, $\alpha_2 \approx (0 \quad 0,(1) \quad 0)$, $\alpha_3 \approx (0 \quad 0 \quad 55{,}6 \cdot 10^{-3})$, $\alpha_4 \approx (27{,}8 \cdot 10^{-3} \quad 0 \quad 0)$. As a result $P(\hat{S}(4) \mid \text{ÀÌÌ} \quad (P)) \approx 27{,}8 \cdot 10^{-3}$.

The third sequence is defined not completely: $\hat{S}_2(4) = s_1(?) s_3(?)$.

According to algorithm $\alpha_1 = (0,(3) \quad 0 \quad 0)$, $\alpha_2 \approx (0,(1) \quad 0,(1) \quad 0,(1))$, $\alpha_3 \approx (0 \quad 0 \quad 148 \cdot 10^{-3})$, $\alpha_4 \approx (74{,}1 \cdot 10^{-3} \quad 0 \quad 74{,}1 \cdot 10^{-3})$. As a result $P(\hat{S}_2(4) \mid AMM(P)) \approx 148 \cdot 10^{-3}$.

Start of this algorithm is made by pressing of the Calculation of Probability of Identification key. In the "results of identification" window the calculated probabilities for the entered sequences are displayed.

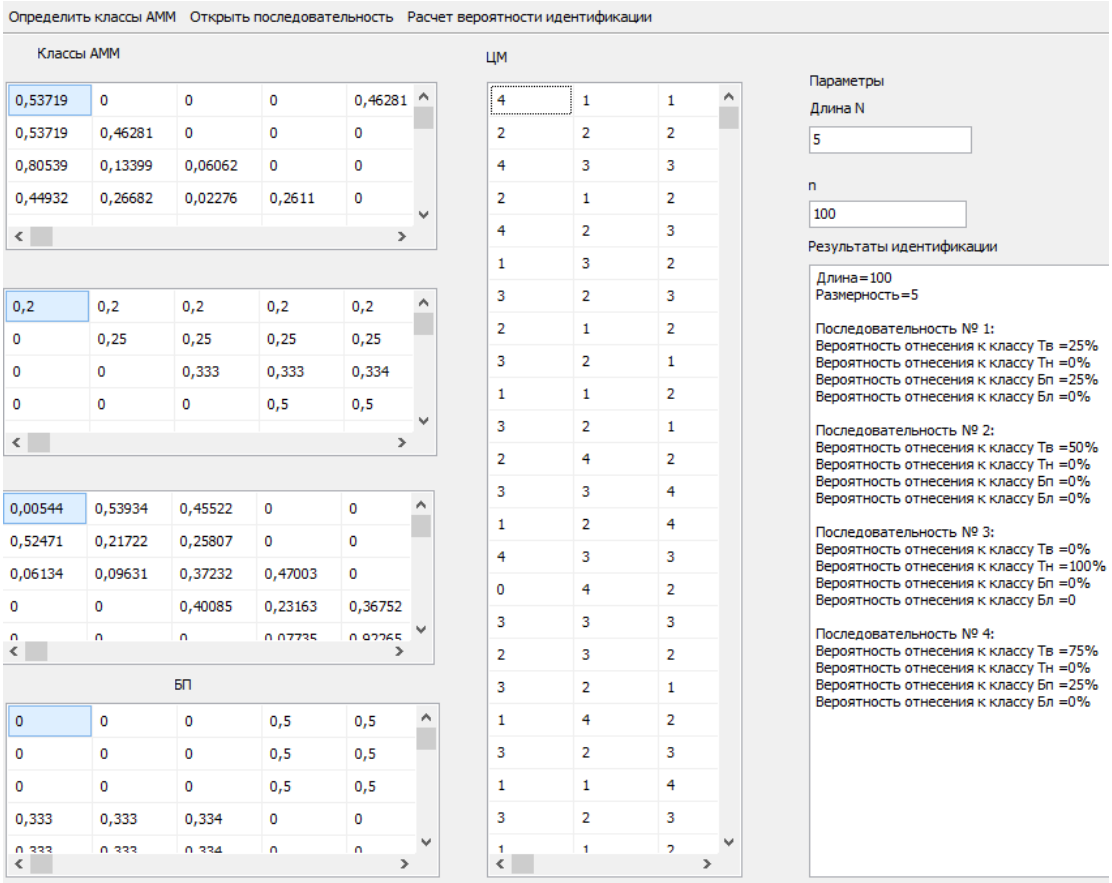



Fig. 2. Example of operation of the module of the program

**2. The used technical means**

Use of the module is possible in the presence of the computer on the basis of the Intel® Pentium® processor or compatible to frequency not less than 1,6 GHz, with random access memory not less than 2 GB. Type and version of OS: Microsoft® Windows 8 (32-and 64-digit).

**3. Special conditions and requirements organizational, technical and technological character**

For work of a resource it is required ON Embarcadero RAD Studio XE3 Version 17.0462553395.

**4. Conditions of transfer of documentation on development or conditions of its sale.**

The program can be issued to any natural person on the basis of the contract for creation of the software product. Contractual price.

## ADVERTISING AND TECHNICAL DESCRIPTION "Mass open online course "Of an innovation in the industry: mechatronics and robotics"

*Federal public autonomous educational institution of the higher education "National research Tomsk state university"*

*Gorbenko T.I., Gorbenko M.V.*

***UDC** 378*

***GRNTI** 14.35.07, 55.30.51*

**1. Functional purpose of a product, area of its application, its appointment**

About a format of representation of a course "Innovations in the industry: mechatronics and robotics"

Course "Innovations in the industry: mechatronics and robotics" it is presented in the MOOK popular format. MOOK are the mass open online courses (English – Massive Open Online Course, MOOC) which are based on granting the academic courses from the leading world universities to any person in any corner of the globe by means of remote technologies with observance of accurate terms of delivery of intermediate and final test tasks and a possibility of the organization of free communication between teachers and listeners of a course.

Key features of MOOK are connected with realization of the principles of a continuity and individualization of education, with the solution of a problem of promoting of the modern scientific ideas "packed" into a form, available to understanding:

1. mass character which consists in limitlessness of number of listeners of a course and orientation to wide audience for which it is necessary "simply to tell about difficult";
2. openness which gives the chance to everyone to gain knowledge free of charge, remotely, in convenient time and in the place, convenient for the listener;
3. integrity of the courses including not just fragments of a training material, but also practical tasks, a communicative component, test materials;
4. an opportunity to receive the certificate in case of successful development of a course.

About the maintenance of a course "Innovations in the industry: mechatronics and robotics"

The young specialists capable to creatively think, develop, project, introduce and to operate difficult systems of intellectual management and robotic complexes are necessary for innovative development of all spheres of robotics.

The course is designed for students of technical specialties, and also those who are interested in robotics.

The mechatronics and robotics covers very wide range of questions, and it is difficult for one person to capture and to deeply study all areas of research of robots. This course will help listeners to orient and choose the concrete direction for further work: studying of structure and kinematics of robots, drives of robots, management and programming, the organization of modern highly effective robotic production, application of computer-aided engineering systems of production of details on machines from ChPU and technological preparation of production, etc.

The program of a course "Innovations in the industry: mechatronics and robotics"

Module 1

Subject 1. Value of robotics in automation of industrial production. Basic concepts and definitions

1.1. Introduction to a course. Production automation history

1.2. Industrial robot and manipulator. Main classes of robots

1.3. Classification of industrial robots

1.4. Features of use of robots. Flexible Production Systems (FPS)

Subject 2. Actuation mechanisms of robots

2.1 Kinematics of multilink manipulators. Working zone of manipulators. Problems of kinematic research

Test task to the module 1.

Module 2

Subject 2. Actuation mechanisms of robots (Continuation)

2.2. Designs of manipulators of industrial robots. Studying of structure, kinematic scheme of the manipulator of the Robin RSS-1 Sphere robot

2.3. Studying of kinematic characteristics of transmission gears of the industrial robot "Robin RSS-1 Sphere"

2.4. Gripping devices

2.5. Drives of industrial robots

Subject 3. Kinematic analysis of mechanisms

3.1. Analytical definition of provisions, speeds and accelerations of links of the manipulator

Test task to the module 2.

Module 3

Subject 3. Kinematic analysis of mechanisms (Continuation)

3.2. Definition of provisions and speeds of links of the manipulator by method of plans

3.3. Definition of accelerations of links of the manipulator by method of plans

Subject 4. Systems of program and adaptive control of robots

4.1. General structure of a control system of industrial robots

4.2. Systems of cyclic, position and planimetric management. Main functions of the software

4.3. Adaptation and levels of adaptation. Software of control systems of adaptive robots. Systems of intellectual control of robots

Test task to the module 3.

Module 4

Subject 5. Systems of an ochuvstvleniye of robots

5.1. Information and touch systems. Systems of technical sight and locational systems. Studying of operation of the robotic assembly stand with technical sight

5.2. Tactile and silomomentny systems of an ochuvstvleniye

5.3. The general function chart of a control system of a robotic complex of machining on the basis of the Robin RSS-1 Sphere robot

Subject 6. The automated monitoring systems and diagnostics of RTK

6.1. Diagnosing of a condition of processing equipment and robots as a part of the robotic technological complex (RTC). Control of a condition of the cutting tool

6.2. Control and measuring systems for processing of a detail

Test task to the module 4.

Module 5

Subject 7. Remotely-controlled robots and manipulators

7.1. Systems of the command and copying control of manipulators. Semi-automatic control systems of manipulators. The operating handles

7.2. Remote control systems of robots

Subject 8. Use of robotic systems

8.1. Use of industrial robots on the main technological operations. Assembly robotic complexes

8.2. Welding robotic complexes

8.3. Robotic complexes for drawing coverings

Test task to the module 5.

Module 6

Subject 8. Use of robotic systems (Continuation)

8.4. Use of industrial robots on auxiliary technological operations. Robotic technological complexes of mechanoprocessing

8.5. Robotic technological complexes of stamping

8.6. Robotic technological complexes of a special purpose

Subject 9. The automated technologies of design and preparation of production: T-FLEX ChPU, T-FLEX.CAD, T-FLEX/TEHNO PRO

Conclusion. Main conclusions and results of a course

Test task to the module 6.

Teachers

Tatyana Gorbenko, candidate of physical and mathematical sciences, associate professor of applied gas dynamics and burning of physics and technology faculty of National research Tomsk state university

Mikhail Gorbenko, Candidate of Technical Sciences, associate professor of theoretical and applied mechanics of Institute of natural resources of National research Tomsk polytechnical university

Audience

The course is designed for students of technical specialties, and also those who are interested in robotics.

Cost and conditions of participation

The course is free. For participation it is necessary to be registered. Successfully mastered a course the opportunity of acquisition of the certificate of the Coursera platform is given. Placement of a course – according to the reference https://www.coursera.org/learn/innovations-in-industry-robotics.

Preparation level

Listeners have to have knowledge of physics and mathematics in volume of the school program.

Ability to be guided in mathematical and physical terms, ability to read formulas, knowledge of basic physical units and their designations, understanding of bases of mechanics will help listeners to complete this course successfully.

**2. The used technical means**

Personal computer, earphones/column, Internet access

**3. Special conditions and requirements of organizational, technical and technological character**

Requirements of organizational character: for studying of a course it is necessary to be registered on the Coursera platform (https://www.coursera.org) and to sign up for a course. The course is free.

Requirements of technical character: Windows (XP, Vista, 7, 10), the Internet browser (Google Chrome, Mozilla Firefox, IE8 above), Adobe Flash Player, the video card with a memory size from 512 MB, the sound card, earphones or columns.

**4. Conditions of transfer of documentation or its sale**

The National research Tomsk state university possesses an exclusive right to all materials of a course which are result of intellectual activity.

## ADVERTISING AND TECHNICAL DESCRIPTION "Mass open online course "3D-the press for all and everyone"

*Federal public autonomous educational institution of the higher education "National research Tomsk state university"*

*Bulahov N.G.*

***UDC 378, 373, 004, 0004.356.2***
***GRNTI 14.35.07, 81.14.11***

**1. Functional purpose of a product, area of its application, its appointment**

About a format of representation of the course "3D-the press for all and everyone"

The course "3D-the press for all and everyone" is presented in the MOOK popular format. MOOK are the mass open online courses (English – Massive Open Online Course, MOOC) which are based on granting the academic courses from the leading world universities to any person in any corner of the globe by means of remote technologies with observance of accurate terms of delivery of intermediate and final test tasks and a possibility of the organization of free communication between teachers and listeners of a course.

Key features of MOOK are connected with realization of the principles of a continuity and individualization of education, with the solution of a problem of promoting of the modern scientific ideas "packed" into a form, available to understanding:

1. mass character which consists in limitlessness of number of listeners of a course and orientation to wide audience for which it is necessary "simply to tell about difficult";

2. openness which gives the chance to everyone to gain knowledge free of charge, remotely, in convenient time and in the place, convenient for the listener;

3. integrity of the courses including not just fragments of a training material, but also practical tasks, a communicative component, test materials;

4. an opportunity to receive the certificate in case of successful development of a course.

About the maintenance of the course "3D-the press for all and everyone"

For certain many of you heard about the three-dimensional press, and at the same time the majority believes that it something from area of high technologies, and therefore very difficult, expensive and not available to the mere mortal. Actually everything is much simpler, more interesting and more available. Everyone who will be trained on this course will be able to assemble the own household 3D-printer, opening almost boundless horizons of modeling, prototyping and creation of exclusive things.

As a necessary theoretical minimum the general principles of the press of three-dimensional objects and technologies of the three-dimensional press extended today, including the materials used at the same time, and also ways and tools of creation of three-dimensional models will be considered. Also the way of assembly and control from improvised materials of the household 3D-printer printing products by method of layer-by-layer fusing of plastic will be stated.

In this course all technological process of the press of three-dimensional objects will be shown. Listeners learn what is 3D models and as they are created in editors of three-dimensional graphics, will visually see in what ways 3D-printers form volume figures, learn of what functional elements 3D-printers consist, will understand how the operating electronics works.

Program of the course "3D-the press for all and everyone"

Module 1. Technologies of the three-dimensional press

1.1. What can be made by means of the 3D-printer

1.2. Ways of the press of three-dimensional objects

1.3. The materials used at the press

1.4. Principles of operation of machines with numerical program control

1.5. Preparation of models and the choice of technologies at the press of concrete objects

Test tasks to the module 1

Module 2. The device and the principle of operation of the three-dimensional printer printing by method of layer-by-layer fusing

2.1. RepRap project. Historical information

2.2. Principle of action

2.3. Knots and units

2.4. The operating electronics

2.5. Features of technology

Test tasks to the module 2

Module 3. Assembly of mechanical part of the printer

3.1. Widespread designs of printers

3.2. Preparation of necessary materials and tools

3.3. Printer framework

3.3.1. We collect a printer framework basis

3.3.2. Installation of the main axes of movement

3.3.3. Assembly of a hot little table

3.3.4. Installation of an axis of movement of an extruder

3.3.5. Assembly of an extruder

3.3.6. Installation of an extruder and step engine
3.4. Electronics and moving parts
3.4.1. Connection of step engines
3.4.2. Installation of a hot little table
3.4.3. Connection of a payment of Arduino
3.4.4. Connection of the additional equipment
3.5. Assembly quality control
Test tasks to the module 3
Module 4. Installation of the necessary software of the printer
4.1. Hardware and software of Arduino
4.2. The operating electronics
4.3. Preparation and loading of the microprogram
4.4. The software for control of the printer and preparation of models
4.5. Testing of working capacity and elimination of malfunctions
Test tasks to the module 4
Module 5. Calibration of the printer and selection of optimum parameters of the press
5.1. Initial calibration of the printer
5.2. Press parameters
5.3. Press of test objects
5.4. The choice of optimum parameters of the press depending on object geometry
5.5. Often met mistakes
Test tasks to the module 5
Module 6. Creation of own models and their optimization for the press
6.1. Theoretical bases of three-dimensional modeling
6.2. Review of three-dimensional editors
6.3. Creation of own model
6.4. Optimization of model for the press
6.5. Object press
Test tasks to the module 6
Teacher

Nikolay Bulakhov, senior teacher of department of quantum electronics and photonics of radio physical faculty, programmer of laboratory of automation of radio physical researches of National research Tomsk state university

Audience

The course will be interesting to school students of the senior classes, students of technical colleges, and also is very useful to the engineers who are engaged in design developments and having a need for production of prototypes of mechanical objects, such as cases of the radio-electronic equipment, fixing designs, models and to that similar objects.

Cost and conditions of participation

The course is free. For participation it is necessary to be registered. Successfully mastered a course the opportunity of acquisition of the certificate of the Coursera platform is given. Placement of a course – according to the reference https://www.coursera.org/learn/3d-printing.

Preparation level

To start studying of a course, it is desirable to possess general information about three-dimensional modeling, electrical equipment, programming and to be able to work with the personal computer at the level of the experienced user.

**2. The used technical means**

Personal computer, earphones/column, Internet access

**3. Special conditions and requirements of organizational, technical and technological character**

Requirements of organizational character: for studying of a course it is necessary to be registered on the Coursera platform (https://www.coursera.org) and to sign up for a course. The course is free.

Requirements of technical character: Windows (XP, Vista, 7, 10), the Internet browser (Google Chrome, Mozilla Firefox, IE8 above), Adobe Flash Player, the video card with a memory size from 512 MB, the sound card, earphones or columns.

**4. Conditions of transfer of documentation or its sale**

The National research Tomsk state university possesses an exclusive right to all materials of a course which are result of intellectual activity.

## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic monograph "An orphanhood in the modern Russian modernized society: teoretiko-legal analysis"

*Sterlitamak branch of Federal public budgetary educational institution of the higher education "Bashkir state university"*

*SHergeng N.A.*

***UDC** 378*

***GRNTI** 14.35.07, 02.41.41*

**1. Functional purpose of a product, scope, its appointment**

The problem of a social orphanhood in Russia in insufficient degree is conceptualized. Situation is complicated by the fact that formation of essentially new system of social support and the help to orphans is carried out in the conditions of transition of national economy to the market relations, increases of social tension, sharp strengthening of a social inequality and social discrimination which is aggravated with the numerous social conflicts.

Besides, until recently, questions of a social orphanhood as an independent social and legal problem were not considered in domestic science.

In the electronic monograph "An orphanhood in the modern Russian modernized society: the teoretiko-legal analysis" teoretiko-legal aspects of an orphanhood in the modern Russian modernized society are given, the orphanhood as the hidden social phenomenon is investigated, legal problems of orphan children are covered, special attention is paid on the characteristic of trasformatsionny processes of the Russian society and their influence on destinies of orphan children.

The software product contains all necessary materials on the put problem.

In the real work state and legal and social problems of an orphanhood in the modern Russian modernized society are investigated, the reasons of emergence and growth of number of social orphans reveal (increase in valuable vacuum, sharp polarization of society on the rich and the poor, destruction of social memory), the main solutions of a problem of a social orphanhood are developed;

The edition includes the structured material:

Title page

Introduction

Heads with the considered problems

List of references

The analysis of the acts regulating position of the orphan children and children who remained without care of parents, and also regulating work of the government and municipal

bodies concerning social protection of this category of citizens is carried out; materials of the state statistics. monographs "An orphanhood in the modern Russian modernized society: the teoretiko-legal analysis" is submitted the secondary analysis of the modern sociological researches devoted to orphanhood problems in our country. Analytical sociological research of various segments of the population which purpose was identification of the relations of citizens of the Russian Federation, on the example of the southern part of the Republic of BashkoAdvertising and technical descriptionstan, to a problem of a social orphanhood in the modern modernized society, questionnaire of orphan children is also presented; expert poll of the experts dealing with childhood issues.

Monograph development stages "An orphanhood in the modern Russian modernized society: teoretiko-legal analysis"

1) inspection of object and justification of need of creation of an electronic course of lectures on discipline "The office right"

2) material systematization

3) creation of the hypertext version of the monograph "An orphanhood in the modern Russian modernized society: the teoretiko-legal analysis" on the basis of the HTML language;

4) studying of the existing analogs of the monograph "An orphanhood in the modern Russian modernized society: teoretiko-legal analysis"

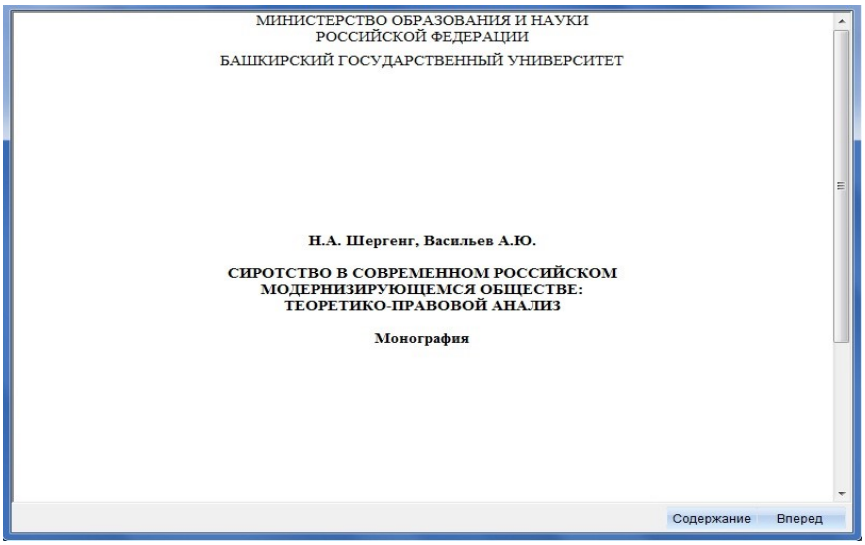
5) creation of objects of interactive virtual demonstration installations, development of design means of computer graphics;

6) development of the ergonomic, comfortable interface of the user, by means of the software of AutoPlay Media Studio 8.0.7.0.

The user interface provides comfortable interaction of the user with the software product. The interface of system is clear and convenient in use, conforms to modern ergonomic requirements.

Screenshots of the electronic monograph "An orphanhood are given in the modern Russian modernized society below: teoretiko-legal analysis"

1

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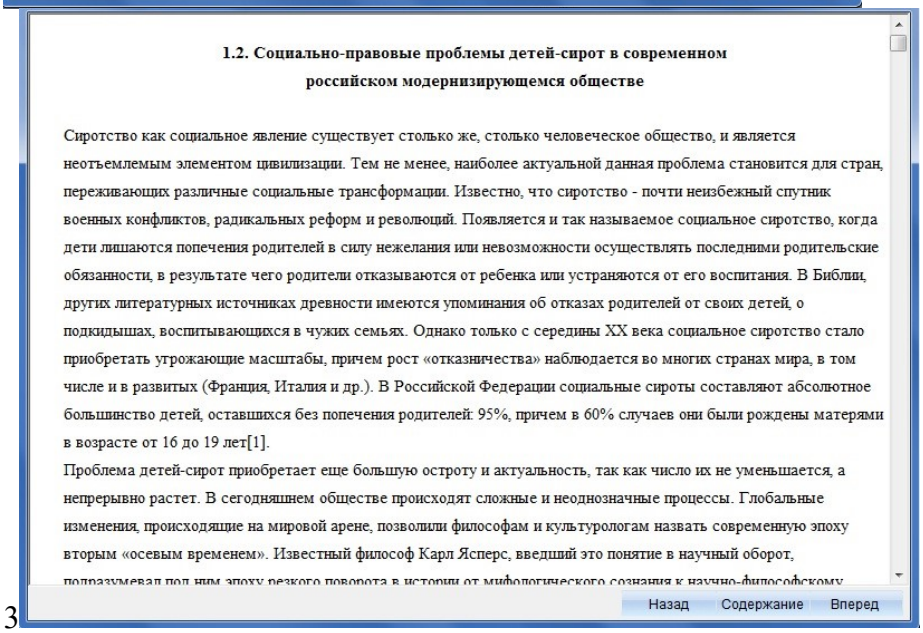



3

**2. The used technical means**

The electronic monograph "An orphanhood in the modern Russian modernized society: the teoretiko-legal analysis" it is created with use of the software of AutoPlay Media Studio of version 8.0.7.0.

Text information is created when using the Microsoft Office package 2007.

The electronic monograph "An orphanhood in the modern Russian modernized society: the teoretiko-legal analysis" can be used both at independent studying of disciplines, and on occupation under the leadership of the teacher when studying material.

**3. Special conditions and requirements of organizational, technical and technological character**

To necessary conditions of application of the edition the Electronic monograph "An orphanhood in the modern Russian modernized society: the teoretiko-legal analysis" belongs: existence of the Intel Pentium computer above; 20 Mb of free disk space; Windows XP OS above; software of Flash Player of version 8.0 above.

**4. Conditions of transfer of documentation or its sale**

Condition of transfer of this software product is the contract of purchase and sale signed between the Sterlitamak branch of the Bashkir state university and interested party.

## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic monograph "Problems and Prospects of Development of Modern Society"

*Sterlitamak branch of Federal public budgetary educational institution of the higher education "Bashkir state university"*
*SHergeng N.A., Nafikova A.I.*

***UDC** 141.8:316*
***GRNTI** 02.41.41*

**1. Functional purpose of a product, scope, its appointment**

The happening changes in modern society demand in-depth and comprehensive investigation of problems and prospects of development of modern society. These problems represent one of the most acute and debatable issues now that, in turn, allows to speak about need and timeliness of studying of this subject.

The monograph is devoted to research of the main problems and prospects of development of modern society. The characteristic of such tendencies of development of the present as the acceleration of time causing in turn acceleration of rate of life, change of language traditions, identity crisis, multiculturalism, etc. is submitted.

In the analysis of prospects of a modern civilization, authors address futurological concepts that allows to estimate the possible directions of further evolution of mankind.

Much attention is paid to consideration of formational and civilization approaches which methodology is the most significant for the analysis of social development.

The software product contains the materials necessary at studying of social and humanitarian disciplines, in particular social philosophy.

Material is stated in the form of heads of separate problems. Thanks to ergonomic design pleasantly and comfortably to work with the monograph.

The edition includes the structured material:

Title page
Contents
Introduction
Heads with the considered problems
List of references

The monograph is presented by certain heads in whom bases of formational and civilization approaches as methodologies of the analysis of social development are investigated; heuristic opportunities of civilization approach to the analysis of social development; main tendencies of development of modern society; modern society and prospects of its development.

Besides the recommended literature on the studied problems is presented in the monograph.

Development stages of the electronic monograph "Problems and Prospects of Development of Modern Society":

1) inspection of object and justification of need of creation of the monograph "Problems and Prospects of Development of Modern Society"

2) systematization of scientific material;

3) creation of the hypertext version of the monograph "Problems and Prospects of Development of Modern Society" on the basis of the HTML language;

4) studying of the existing analogs of monographs on the problems investigated in the monograph;

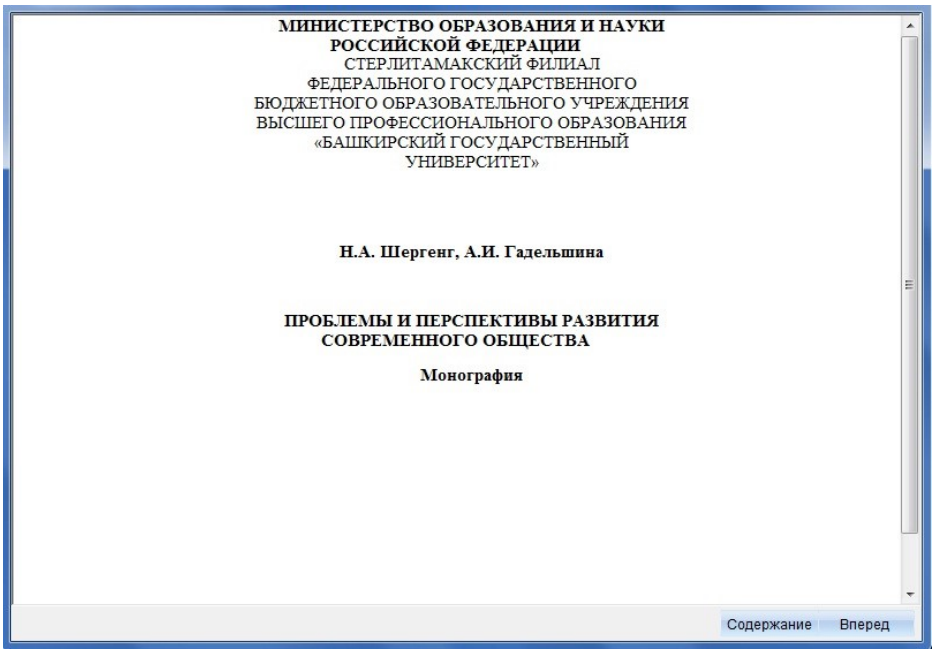
5) creation of objects of interactive virtual demonstration installations, development of design means of computer graphics;

6) development of the ergonomic, comfortable interface of the user, by means of the software of AutoPlay Media Studio 8.0.7.0.

The user interface provides comfortable interaction of the user with the software product. The interface of system is clear and convenient in use, conforms to modern ergonomic requirements.

Screenshots of the monograph "Problems and Prospects of Development of Modern Society" are given below

1

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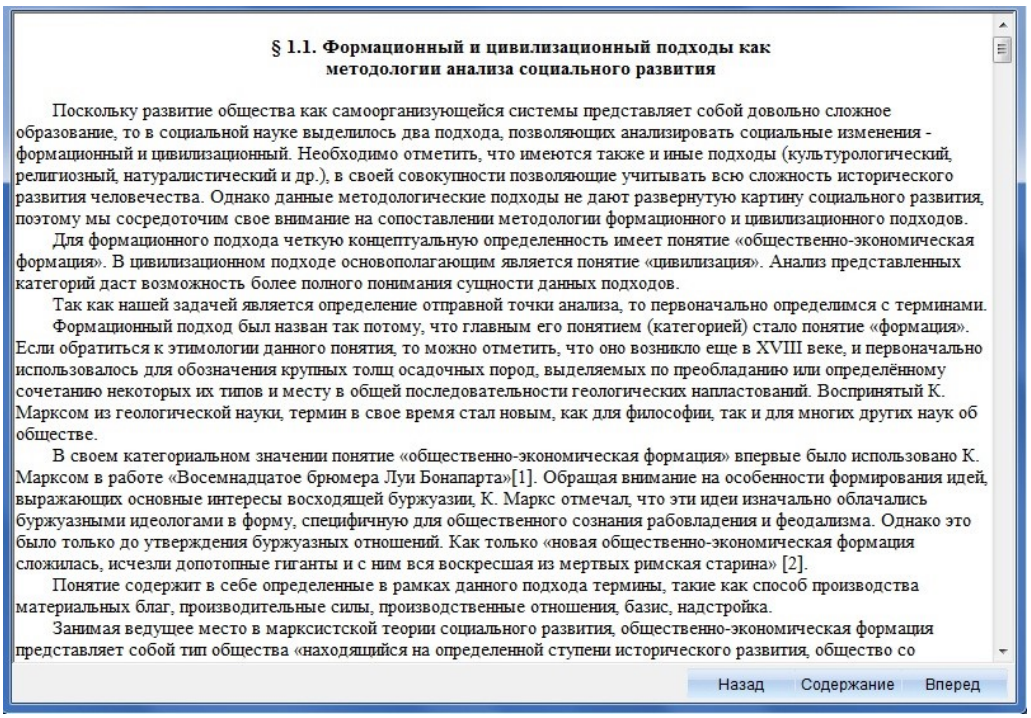

**§ 1.1. Формационный и цивилизационный подходы как методологии анализа социального развития**

Поскольку развитие общества как самоорганизующейся системы представляет собой довольно сложное образование, то в социальной науке выделилось два подхода, позволяющих анализировать социальные изменения - формационный и цивилизационный. Необходимо отметить, что имеются также и иные подходы (культурологический, религиозный, натуралистический и др.), в своей совокупности позволяющие учитывать всю сложность исторического развития человечества. Однако данные методологические подходы не дают развернутую картину социального развития, поэтому мы сосредоточим свое внимание на сопоставлении методологии формационного и цивилизационного подходов.

Для формационного подхода четкую концептуальную определенность имеет понятие «общественно-экономическая формация». В цивилизационном подходе основополагающим является понятие «цивилизация». Анализ представленных категорий даст возможность более полного понимания сущности данных подходов.

Так как нашей задачей является определение отправной точки анализа, то первоначально определимся с терминами.

Формационный подход был назван так потому, что главным его понятием (категорией) стало понятие «формация». Если обратиться к этимологии данного понятия, то можно отметить, что оно возникло еще в XVIII веке, и первоначально использовалось для обозначения крупных толщ осадочных пород, выделяемых по преобладанию или определённому сочетанию некоторых их типов и месту в общей последовательности геологических напластований. Воспринятый К. Марксом из геологической науки, термин в свое время стал новым, как для философии, так и для многих других наук об обществе.

В своем категориальном значении понятие «общественно-экономическая формация» впервые было использовано К. Марксом в работе «Восемнадцатое брюмера Луи Бонапарта»[1]. Обращая внимание на особенности формирования идей, выражающих основные интересы восходящей буржуазии, К. Маркс отмечал, что эти идеи изначально облачались буржуазными идеологами в форму, специфичную для общественного сознания рабовладения и феодализма. Однако это было только до утверждения буржуазных отношений. Как только «новая общественно-экономическая формация сложилась, исчезли допотопные гиганты и с ним вся воскресшая из мертвых римская старина» [2].

Понятие содержит в себе определенные в рамках данного подхода термины, такие как способ производства материальных благ, производительные силы, производственные отношения, базис, надстройка.

Занимая ведущее место в марксистской теории социального развития, общественно-экономическая формация представляет собой тип общества «находящийся на определенной ступени исторического развития, общество со

Назад Содержание Вперед

**2. The used technical means**

The electronic monograph "Problems and Prospects of Development It Is Modern Societies" is created with use of the software of AutoPlay Media Studio of version 8.0.7.0.

Text information is created when using the Microsoft Office package 2007.

The electronic monograph "Problems and Prospects of Development It Is Modern Societies" can be used as for preparation for classes in disciplines of a social and humanitarian cycle, and for independent studying of the problems and prospects of development facing modern society.

The purpose of the monograph "Problems and Prospects of Development It Is Modern Societies" consists in systematization of scientific material and in development of skills of self-education of students through work with the scientific literature necessary for profound studying of social and humanitarian disciplines, and also development in them of steady abilities to independent (without the assistance of the teacher) to studying, a statement and application of the obtained information.

**3. Special conditions and requirements of organizational, technical and technological character**

The Electronic monograph "Problems and Prospects of Development It Is Modern Societies" belongs to necessary conditions of application of the edition: existence of the Intel Pentium computer above; 20 Mb of free disk space; Windows XP OS above; software of Flash Player of version 8.0 above.

**4. Conditions of transfer of documentation or its sale**

Condition of transfer of this software product is the contract of purchase and sale signed between the Sterlitamak branch of the Bashkir state university and interested party.

## ADVERTISING AND TECHNICAL DESCRIPTION "Mass open online course "The Changing Arctic (The Changing Arctic)"

*Federal public autonomous educational institution of the higher education "National research Tomsk state university"*

*Kallagan T.V.*

***UDC** 378, 502, 504, 574*

***GRNTI** 14.35.07, 14.37.01, 87.01.11*

**1. Functional purpose of a product, area of its application, its appointment**

About a format of representation of the course "The Changing Arctic (The Changing Arctic)"

The course "The Changing Arctic (The Changing Arctic)" is presented in the MOOK popular format. MOOK are the mass open online courses (English – Massive Open Online Course, MOOC) which are based on granting the academic courses from the leading world universities to any person in any corner of the globe by means of remote technologies with observance of accurate terms of delivery of intermediate and final test tasks and a possibility of the organization of free communication between teachers and listeners of a course.

Key features of MOOK are connected with realization of the principles of a continuity and individualization of education, with the solution of a problem of promoting of the modern scientific ideas "packed" into a form, available to understanding:

1. mass character which consists in limitlessness of number of listeners of a course and orientation to wide audience for which it is necessary "simply to tell about difficult";

2. openness which gives the chance to everyone to gain knowledge free of charge, remotely, in convenient time and in the place, convenient for the listener;

3. integrity of the courses including not just fragments of a training material, but also practical tasks, a communicative component, test materials;

4. an opportunity to receive the certificate in case of successful development of a course.

About the maintenance of the course "The Changing Arctic (The Changing Arctic)"

Terry Callaghan's course, the Nobel Prize laureate and one of the leading world experts on a problem of change of environment, "the Changing Arctic (The Changing Arctic)" tells about complex transformation of ecology of the Arctic.

The course purpose – to give profound knowledge about an ecosystem of the Arctic and to inspire students and the world community is more attentive to belong to its nature. Terry Callaghan will not just tell about global warming and thawing of glaciers, but will share results of fresh scientific researches of a number of ecologists.

On a course listeners will understand how they were formed and as landscapes of the Arctic changed and why it is important about it the nobility. Listeners will hear about features of cooperation of scientists from the northern countries who try to find out how changes of the Arctic environment will affect plants, animals and processes of an ecosystem, inhabitants of the North and all population of Earth.

Under the leadership of Terry listeners will get acquainted with a number of scientific approaches to environmental issues, learn the last actual information on the processes happening in the Arctic at present. The Arctic is rich not only beautiful landscapes, but also a huge number of non-renewable resources – oil, gas, minerals. The transformation of an ecosystem of the Arctic interconnected with resources not only is of great importance for the people of Far North, but also influences climate around the world. On a course listeners will discuss what global problems are involved by transformation of environment of the Arctic and what opportunities it opens for mankind.

Program of the course "The Changing Arctic (The Changing Arctic)"

Module 1. What is the Arctic, where is it and why should we be interested in it?

Subject 1. Introduction.

The test to the module 1

Module 2. Changing landforms: legacy of glaciers and permafrost.

Subject 2. Landscapes and land-forming processes.

The test to the module 2

Module 3. Permafrost and its effects.

Subject 3. Permafrost.

The test to the module 3

Module 4. Snow and ice.

Subject 4.1. Snow.
Subject 4.2. Glaciers.
The test to the module 4
Module 5. Land-atmosphere linkages.
Subject 5. Land-atmosphere linkages.
The test to the module 5
Module 6. Life on cold lands.
Subject 6. Life on cold lands.
The test to the module 6
Module 7. Life in cold waters.
Subject 7. Cold waters.
The test to the module 7
Module 8. The People of the Arctic.
Subject 8. People of the North.
The test to the module 8
Module 9. The global Community affected by the changing Arctic.
Subject 9. Conclusion.
The test to the module 9
Module 10. What can we do to understand the changes and their consequences?.
Subject 10. INTERACT.
The test to the module 10
Teacher

Terry Callaghan, the Nobel Peace Prize laureate of 2007 (head), honored professor-researcher and the member of the Swedish Royal Academy of Sciences, professor of University of Sheffield, professor of National research Tomsk state university, the coordinator of the INTERACT Network, the director of research station Abisko (1996-2010), is awarded by the Polar Medal (Great Britain) and Vega Medal (Sweden)

Audience

The course will be interesting to those who is interested in global ecological processes and the nature of the Arctic, to students, the studying ecology and related subjects – the biogeography, geoecology, environmental protection, and also to experts investigating the Arctic ecosystem.

Cost and conditions of participation

The course is free. For participation it is necessary to be registered. Successfully mastered a course the opportunity of acquisition of the certificate of the Coursera platform is given. Placement of a course – according to the reference https://www.coursera.org/learn/changing-arctic.

Preparation level

For passing of a course it is enough to students to have natural curiosity and desire to understand world environmental problems. The found terms and concepts are focused on the level of the senior school students and students of initial courses. For profound studying of these or those parties of global climatic changes additional materials are provided.

**2. The used technical means**

Personal computer, earphones/column, Internet access

**3. Special conditions and requirements of organizational, technical and technological character**

Requirements of organizational character: for studying of a course it is necessary to be registered on the Coursera platform (https://www.coursera.org) and to sign up for a course. The course is free.

Requirements of technical character: Windows (XP, Vista, 7, 10), the Internet browser (Google Chrome, Mozilla Firefox, IE8 above), Adobe Flash Player, the video card with a memory size from 512 MB, the sound card, earphones or columns.

**4. Conditions of transfer of documentation or its sale**

The National research Tomsk state university possesses an exclusive right to all materials of a course which are result of intellectual activity.

## ADVERTISING AND TECHNICAL DESCRIPTION "Remote Training Course "Economy and the Organization of Productions " (the Direction of Preparation 09.03.02 — Information Systems and Technologies)"

*Federal public budgetary educational institution of the higher education "Ryazan state radio engineering university"*

*Kutuzova I.B.*

***UDC** 378*

***GRNTI** 14.35.07, 06.81.00*

**1. Functional purpose, scope, its restrictions**

The structure and the maintenance of modern educational programs and standards are defined by formation of qualitatively new functions and types of professional activity connected with mass use of means of the information and communication technologies (CT) in educational activity.

The remote training course "Economy and the organization of production" is developed for all forms of education (internal, intramural and extramural, correspondence).

The maintenance of a course is focused on formation at students of theoretical knowledge and practical skills on discipline "Economy and the organization of production", and also development of technologies of distance learning with a possibility of their practical realization in the program Moodle environment.

Fig. 1 Main page of a remote training course

The developed remote training course (see fig. 1) has modular structure. Each module (subject) represents the finished fragment with the didactic task (examination) directed to formation at students of certain professional competences.

Application of competence-based approach allows to concretize the maintenance of modules of a remote course taking into account the main activities of the teacher in system of

distance learning. Modules of a course contain the theoretical, practical and controlling materials directed to formation at students of the professional competences necessary for the organization and carrying out educational process with use of remote educational technologies.

Students are provided with a set of electronic educational and methodical and reference materials (lectures, practical works), detailed instructions and methodical recommendations. Detailed descriptions of lectures and practical tasks allow the student to get acquainted with the basic concepts of economy of the enterprise and organization of production, to receive necessary skills and abilities according to the solution of practical tasks.

When developing this remote course the basic principle – the most complete and evident idea of a training material providing individual independent studying, and also creation of enough the internal and external relations allowing to organize effective and fast access for the trainee to necessary information was considered.

2. Structure and conditions of application

The remote training course "Economy and the organization of production" consists of nine main modules and has the following structure:

*1. Introduction module*

*2. The enterprise in the competitive environment*

*3. Production of the enterprise. Production program of the enterprise. Production capacity*

*4. Resources of the enterprise*

*5. Costs of the enterprise. Production price. Profit of the enterprise*

*6. Structure of the enterprise. Management of the enterprise*

*7. The organization of production at the enterprise*

*8. Total module*

*9. Help module*

Information resources and interactive elements – lectures and practical tasks are a part of modules.

In the first module (the introduction module) the information about the author and the studied discipline are supplied. Methodical instructions for students on studying of modules of a course are provided, the plan of studying of discipline is given. Also in this module the student has an opportunity to ask a question to the teacher.

The following six modules are the main substantial modules of the considered remote course. Each module contains material which should be studied (lectures in which theoretical and practical material on this subject is in detail presented) and material of a practical orientation (control tasks on a subject). Lecture represents PDF file. In each module the student is offered to perform the control task containing theoretical questions and practical tasks by options which it sends on check to the teacher.

The total module represents total testing at all course (fig. 2).

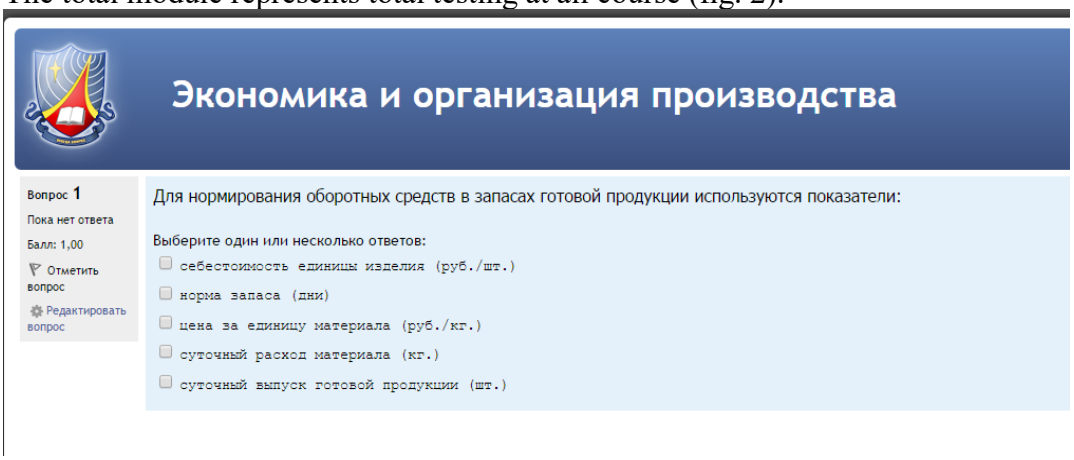


Fig. 2. Total testing in Moodle

In the help module the list of the recommended literature and the list of questions are provided to offset, and also are provided the civil code of the Russian Federation (part 1) and laws on various legal forms of the enterprises.

As basic tools for development of a remote course freely extended software package of Moodle representing a learning management system in the electronic environment is used. This system was designed according to requirements of modern pedagogics and for level of the given opportunities bears comparison with the known commercial systems owing to what proved from a positive side in a number of foreign and Russian higher education institutions.

Educational and methodical materials of a remote course are presented in the form of files of various formats supported by Moodle (text and web pages, references to files (*.pdf, *.doc), catalogs, archives (*.zip), references to resources the Internet, etc.

Resources of a course can be studied directly on the computer, or to keep on the local computer for the press and further acquaintance. Interactive elements (lectures, tasks of various types, glossaries, tests) allow to focus attention of listeners on separate fragments of the studied material, to check the level of knowledge, to organize interaction of listeners with each other and with the teacher.

For work with a remote course it is recommended to use the Mozilla Firefox, Yandex or Google chrome browsers as when using other browsers correct work of the website of distance learning is not guaranteed.

The remote training course "Economy and the organization of production" is approved at evening (correspondence) faculty of the Ryazan state radio engineering university.

**2. The used technical means**

The personal computer, the laptop, the tablet or the smartphone with the installed necessary software products (MS Office 2003/2007/2010/2013, Adobe Acrobat or Adobe Reader) is necessary for work with a remote course.

Work with a remote course requires existence of connection of the user to the Internet and access to the server of system of distance learning of higher education institution on which this course is placed.

**3. Conditions of transfer and sale of program documentation**

Distribution and use of a remote training course "Economy and the organization of production" can be carried out only with the consent of the author.

Reference to a course: Duk_ekonomika and organization of production

The course can be transferred to the interested person or the organization on the basis of the contract according to the current legislation.

## ADVERTISING AND TECHNICAL DESCRIPTION "Multimedia Slide Lectures for Distance Learning on Discipline " Marketing and Management " (the Direction — 38.03.02 Management, Level — a Bachelor Degree)"

*Federal public budgetary educational institution of the higher education "Omsk state technical university"*

*Ahmetova G.Z.*

***UDC** 378*

***GRNTI** 14.35.07, 06.35.01, 82.05.09*

**1. Functional purpose of the program, scope, its restrictions**

Purpose of the multimedia educational and methodical complex (EMC) on discipline "Marketing and management": independent use by students as educational and methodical

materials at distance learning for theoretical preparation and self-examination. Multimedia UMK is suitable for maintenance of all types of educational activity at full-time courses.

During creation of a multimedia educational and methodical complex for distance learning on discipline "Marketing and management" were used author's materials: drawings, tables, test blocks. The resources which are available in free access on the Internet were in addition used.

Training materials have:

- the accurate modular structure coordinated with the working program of discipline;
- complexity (include theoretical, practical, control materials);
- completeness of a statement;
- high extent of visualization (i.e. contain illustrations, tables, etc.).

Training materials display the modern level and scientific achievements in the respective sphere.

UMK "Marketing and Management" contains 12 multimedia slide lectures.

Multimedia slide lectures:

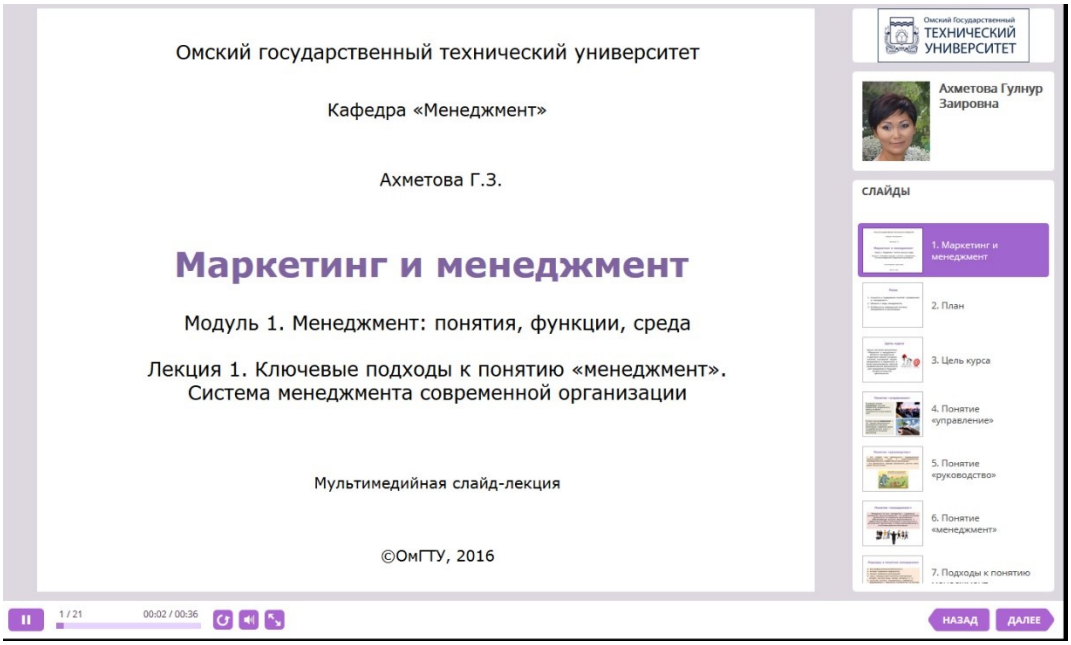


Fig. 1. An example of slide lecture in system in iSpring Suite 8

2.1. Multimedia slide lecture "Key approaches to the concept "management". System of management of the modern organization" - 20,2 MB.

2.2. The multimedia slide lecture "External and Internal Environment of the Organization" - 20,7 MB.

2.3. Multimedia slide lecture "Planning: concept, characteristics and types" - 16,8 MB.

2.4. Multimedia slide lecture "Division of labor. The main types of organizational structures of management" - 20,5 MB.

2.5. Multimedia slide lecture "Motivation: substantial and procedural theories" - 21,4 MB.

2.6. Multimedia slide lecture "Control: classification and process" - 18,2 MB.

2.7. Multimedia slide lecture "Marketing purposes. Concepts of marketing" - 18,9 MB.

2.8. The multimedia slide lecture "Organization of Marketing Activity" - 17,3 MB.

2.9. The multimedia slide lecture "Market researches" - 15,5 MB.

2.10. Multimedia slide lecture "The factors influencing behavior of buyers. Process of making decision on purchase" - 21,6 MB.

2.11. The multimedia slide lecture "Segmentation and Positioning of Goods in the Market" - 17,3 MB.

2.12. Multimedia slide lecture "Goods: concept, types and range. A complex of marketing communications" - 16,9 MB.

Total: 225,3 MB.

EUMK is approved in Omsk the state technical university on specialties of extramural studies.

As technical means for creation of components of multimedia UMK on discipline "Marketing and management" were used software products: Power Point, iSpring Suite 8. The main advantages of these tools is ease and speed of the created materials.

**2. The used technical means**

2.1. For distance learning on discipline "Marketing and management" are necessary for development of a multimedia educational and methodical complex the following equipment rooms and software:

1. Computer and AMD Phenom (tm) II processor.
2. Random access memory – 4096 MB.
3. Summary space on the hard drive of 1024 MB.
4. Color SVGA monitor of the computer resolution 1024x768 and above.
5. Operating system: Windows 7.
6. iSpring Suite 8.

2.2. For distance learning on discipline "Marketing and management" of the user are necessary for functioning of a multimedia educational and methodical complex the following equipment rooms and software:

When viewing on the computer:

Computer and Intel/AMD processor of 1 GHz or above.

Random access memory – 1024 MV.

Free space on the hard drive of 1024 MB.

Color SVGA monitor of the computer resolution 1024x768 and above.

Operating system: Windows XP/Vista/7/8, Macintosh, Linux.

Software: Internet Explorer 6 above, Mozilla Firefox 3.x above, Safari 3 above, Google Chrome, Opera 9.5 above, Adobe Flash Player 10.1 or above.

For viewing on mobile devices:

Mobile devices with resolution 480x320 and above.

Operating system: Mobile: Android 3.x or higher, iPad, iPad2, The New iPad (iOS 5.x or higher), Windows Phone 7.5 or higher, Windows RT.

The software for mobile devices. Desktop: Internet Explorer 9 or higher, Safari 5 or higher, Mozilla Firefox 12 or higher, Opera 11.6 or higher, Google Chrome 18 or higher.

**3. Special conditions of application and requirement of organizational, technical and technological character**

Application of an educational and methodical complex for distance learning on discipline "Marketing and management" is possible in the conditions of a modern educational computer class, and also on mobile devices of pupils at network placement of a complex with access on the Internet. The multimedia course is placed in a cloud service of iSpring Cloud and is available according to the reference https://ispri.ng/LWW5.

**4. Conditions of transfer and sale of program documentation**

Multimedia educational and methodical complex for distance learning on discipline "Marketing and management" and documentation to it can be transferred to the interested person or the organization on the basis of the contract with OMGTU and authors according to the current legislation.

# ADVERTISING AND TECHNICAL DESCRIPTION "Multimedia Educational and Methodical Complex on Discipline "Human Resource Management" (38.03.03 — Human Resource Management, Level — a Bachelor Degree)"

*Federal public budgetary educational institution of the higher education "Omsk state technical university"*
*CHibikova T.V.*

***UDC** 378*
***GRNTI** 14.35.07, 06.81.65*

**1. Functional purpose of the program, scope, its restrictions**

Purpose of the multimedia educational and methodical complex (EMC) on discipline "Human resource management": independent use by students as educational and methodical materials at distance learning for theoretical preparation and self-examination. Multimedia UMK is suitable for maintenance of all types of educational activity at full-time courses.

During creation of a multimedia educational and methodical complex for distance learning on discipline "Human resource management" author's materials were used: drawings, tables, test blocks. The resources which are available in free access on the Internet were in addition used.

Training materials have:

- the accurate modular structure coordinated with the working program of discipline;
- complexity (include theoretical, practical, control materials);
- completeness of a statement;
- high extent of visualization (i.e. contain illustrations, tables, etc.).

Training materials display the modern level and scientific achievements in the respective sphere.

UMK "Human resource management" contains 11 multimedia slide lectures.

Multimedia slide lectures:

1. The multimedia slide lecture "Theories of Management about a Role of the Person in the Organization" - 32,29 MB.
2. The multimedia slide lecture "Personnel Planning in the Organization" - 26,94 MB.
3. The multimedia slide lecture "Personnel policy" - 50,77 MB.
4. The multimedia slide lecture "Methods of Management of Personnel" - 30,14 MB.
5. The multimedia slide lecture "Labour Adaptation of Personnel" - 22,56 MB.

Fig. 1. An example of slide lecture in system in iSpring Suite 8

6. The multimedia slide lecture "Motivation of Work" - 76,01 MB.
7. The multimedia slide lecture "Retraining and Training of Personnel" - 53,14 MB.
8. The multimedia slide lecture "Management of Business Career" - 30,32 MB.
9. Multimedia slide lecture "Performance appraisal. Certification" - 46,12 MB.
10. The multimedia slide lecture "Management of the Conflicts" - 22,36 MB.
11. The multimedia slide lecture "Release of Personnel" - 21,59 MB.

Total: 412,24 MB.

EUMK is approved in Omsk the state technical university on specialties of extramural studies.

As technical means for creation of components of multimedia UMK on discipline "Human resource management" software products were used: Power Point, iSpring Suite 8. The main advantages of these tools is ease and speed of the created materials.

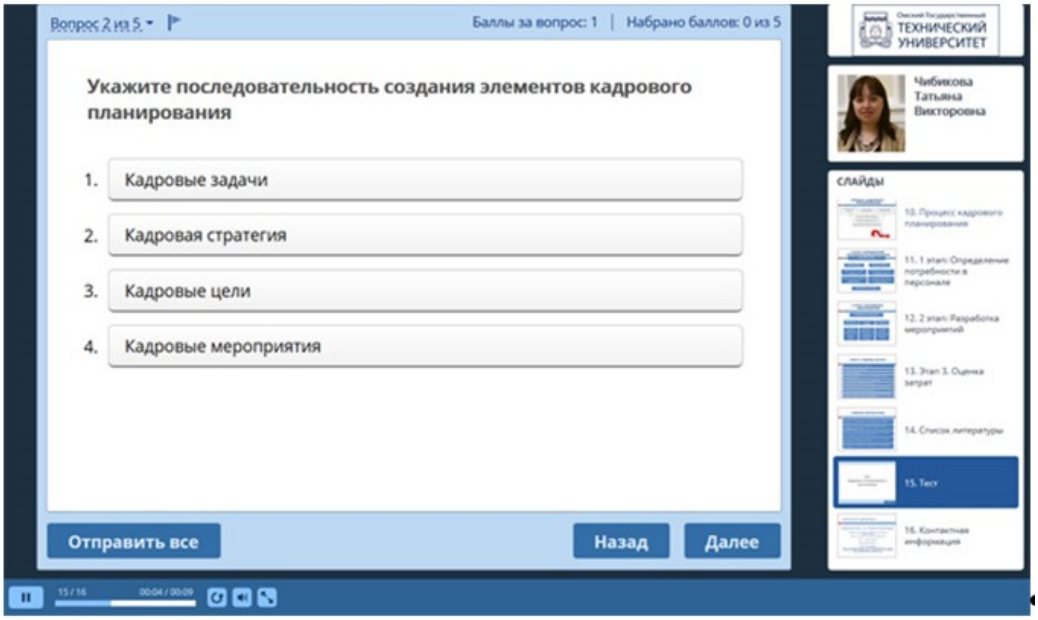


Fig. 2. An example of the test on discipline "Human resource management"

**2. The used technical means**

2.1. The following equipment rooms and software are necessary for development of a multimedia educational and methodical complex for distance learning on discipline "Human resource management":

1. Computer and AMD Phenom (tm) II processor.

2. Random access memory – 4096 MB.
3. Summary space on the hard drive of 1024 MB.
4. Color SVGA monitor of the computer resolution
1024x768 and above.
5. Operating system: Windows 7.
6. iSpring Suite 8.

2.2. The following equipment rooms and software are necessary for functioning of a multimedia educational and methodical complex for distance learning on discipline "Human resource management" of the user:

When viewing on the computer:

Computer and Intel/AMD processor of 1 GHz or above.

Random access memory – 1024 MV.

Free space on the hard drive of 1024 MB.

Color SVGA monitor of the computer resolution 1024x768 and above.

Operating system: Windows XP/Vista/7/8, Macintosh, Linux.

Software: Internet Explorer 6 above, Mozilla Firefox 3.x above, Safari 3 above, Google Chrome, Opera 9.5 above, Adobe Flash Player 10.1 or above.

For viewing on mobile devices:

Mobile devices with resolution 480x320 and above.

Operating system: Mobile: Android 3.x or higher, iPad, iPad2, The New iPad (iOS 5.x or higher), Windows Phone 7.5 or higher, Windows RT.

The software for mobile devices. Desktop: Internet Explorer 9 or higher, Safari 5 or higher, Mozilla Firefox 12 or higher, Opera 11.6 or higher, Google Chrome 18 or higher.

**3. Special conditions of application and requirement of organizational, technical and technological character**

Application of an educational and methodical complex for distance learning on discipline "Human resource management" is possible in the conditions of a modern educational computer class, and also on mobile devices of pupils at network placement of a complex with access on the Internet. The multimedia complex is placed in a cloud service of iSpring Cloud and is available according to the reference https://ispri.ng/YMGy.

**4. Conditions of transfer and sale of program documentation**

Multimedia educational and methodical complex for distance learning on discipline "Human resource management" and documentation to it can be transferred to the interested person or the organization on the basis of the contract with OMGTU and authors according to the current legislation.

# ADVERTISING AND TECHNICAL DESCRIPTION "Remote training course "Elementary mathematics" (the direction of preparation - 11.03.01 "Radio engineerings", 02.03.03 "Software and administration of information systems", 09.03.01 "Informatics and computer facilities", 09.03.02 "Information systems and technologies", 09.03.03 "Applied informatics", 09.03.04 "Program engineering", 11.03.02 "Infocommunication technologies and communication systems", 11.03.03 "Designing and technology of electronic means", 11.03.04 "Electronics and a nanoelectronics", 12.03.01 "Instrument making", 12.03.04 "Biotechnical systems and technologies", 13.03.02 "Power industry and electrical equipment", 15.03.04 "Automation of technological processes and productions", 15.03.06 "Mechatronics and robotics", 18.03.01 "Chemical technology", 27.03.01 "Standardization and metrology", 27.03.04 "Management in technical systems", 38.03.01 "Economy", 38.03.02 "Management", 38.03.03 "Human resource management", 38.03.04 "The public and municipal administration", 39.03.02 "Social work, a profile – a bachelor degree)"

*Federal public budgetary educational institution of the higher education "Ryazan state radio engineering university"*

*Bogatova S.V., Ciporkova K.A., Buhenskij K.V., Luk'yanova G.S., Grishina V.V. . YOlkina N.V.*

***UDC** 378*
***GRNTI** 14.35.07, 27.03.15, 27.01.45*

**1. Functional purpose, scope, its restrictions**

The remote training course "Elementary mathematics" is developed according to the federal state educational standard of higher education for the directions 02.03.03 "Software and administration of information systems", 09.03.01 "Informatics and computer facilities", 09.03.02 "Information systems and technologies", 09.03.03 "Applied informatics", 09.03.04 "Program engineering", 11.03.01 "Radio engineerings", 11.03.02 "Infocommunication technologies and communication systems", 11.03.03 "Designing and technology of electronic means", 11.03.04 "Electronics and a nanoelectronics", 12.03.01 "Instrument making", 12.03.04 "Biotechnical systems and technologies", 13.03.02 "Power industry and electrical equipment", 15.03.04 "Automation of technological processes and productions", 15.03.06 "Mechatronics and robotics", 18.03.01 "Chemical technology", 27.03.01 "Standardization and metrology", 27.03.04 "Management in technical systems", 38.03.01 "Economy", 38.03.02 "Management", 38.03.03 "Human resource management", 38.03.04 "The public and municipal administration", 39.03.02 "Social work".

The course is intended for training of students in the first semester and focuses them on systematization and deepening of school knowledge that will allow students to study successfully the higher mathematics and special disciplines.

As the program environment for development of a remote course the learning management system of Moodle which giving to the developer a wide range of opportunities of use of electronic resources and interactive elements is used. Placement is aware of references to Internet resources considerably expands the educational environment due to attraction of additional sources of information. The system provides interactive interaction between all participants of educational process, and also carrying out different types of control of progress, gives opportunities of the analysis of results.

The developed remote training course "The elementary mathematics" has block and modular structure (fig. 1).

During creation of a remote training course features of the organization of educational process at full-time courses were considered. It is aware most fully and the educational and methodical materials providing their consecutive and independent studying at individual speed are visually presented. The forum, an exchange of messages as interactive communicative elements provide additional information exchange of the student with the teacher of a course, including during the intersession period.

Fig. 1 Main page of a remote training course

**2. Structure and conditions of application**

The remote training course "Elementary mathematics" consists of 2 modules and has the following structure:

| № | Name of the module | Contents |
|---|---|---|
| 0 | Introduction module | • forum "news module";<br>• methodical instructions for students;<br>• forum "Organizational Issues of Training". |
| 1 | Subject 1<br>Elementary mathematics | • Lecture 1. Degree of a real number;<br>• Lecture 2. Formulas of abridged multiplication. Square trinomial;<br>• Lecture 3. Solution of fractional and rational inequalities. Method of intervals;<br>• Lecture 4. Polynomials and fractional and rational functions, the proper and improper fractions, decomposition of the wrong fractional and rational function for the sum of the whole part and a proper fraction, division by a corner, methods of uncertain coefficients and private values;<br>• Lecture 5. Module of a real number;<br>• Lecture 6. Logarithm of number and its property;<br>• Lecture 7. Trigonometrical formulas;<br>• Lecture 8. Functions. Range of definition, Set of values. Even and odd functions. Periodic functions. Main elementary functions;<br>• Control testing on the subject "Elementary Mathematics". |

| № | Name of the module | Contents |
|---|---|---|
| 2 | Subject 2<br>Help module | • Reference materials on elementary mathematics;<br>• list of references<br>• video lectures on mathematics of the teacher of Logos LV school, senior teacher of faculty of pre-university preparation of MITHT Tarasov V.A.;<br>• the page of department of the higher mathematics on RGRTU website. |

Educational and methodical materials of a remote course are presented in the form of interactive elements (lectures, tests, forums) and information resources (files of various formats supported by Moodle, references to resources the Internet).

The main electronic resources and additional multimedia materials can be studied directly in system, to keep on the local computer for more detailed studying in the individual mode, if necessary – to unpack.

The control final test contains 10 questions which in a random way get out of the general voprosny base.

Interactive elements allow to focus attention of students on separate fragments of the studied material, to estimate the level of knowledge, to organize interaction of all participants of educational process.

The remote training course "Elementary mathematics" is approved in educational process of RGRTU.

**3. The used technical means**

Work with a remote training course requires presence at the user of the computer or the mobile device with connection to the Internet, it is recommended to use the Mozilla Firefox or Google Chrome browser.

**Viewing of files of various formats, performance of tasks on subjects of a course requires installation of the corresponding software:**

programs for viewing of PDF files (Adobe Reader, Foxit Reader);

package of office programs (MS Office, OpenOffice).

**4. Conditions of transfer and sale of program documentation**

Distribution and use of a remote training course "Elementary mathematics" can be carried out only with the consent of the author.

Reference to a course: Elementary matemitika

The remote course can be transferred to the interested person or the organization on the basis of the contract according to the current legislation.

Concerning acquisition it is possible to address in FGBOU VPO "The Ryazan state radio engineering university".

Address: 390005, Ryazan Gagarin St., 59/1

Phone: (4912) 46-04-37

E-mail: cdo@rsreu.ru

## ADVERTISING AND TECHNICAL DESCRIPTION "Organization of Graphic Systems Program

*Federal public budgetary educational institution of the higher education "Omsk state technical university"*

*YAnishevskaya A.G., Mahkamov F.I., SHarf V.I.*

***UDC** 378*

***GRNTI** 14.35.07, 50.10.43*

**1. Functional purpose of a product, scope, its appointment**

The program is intended for studying of graphic systems and executed in the form of the electronic textbook consisting of 10 heads:

1) Concept of the interactive car;
2) Graphic languages of high level;
3) Procedural graphic languages;
4) Architecture of graphic workstations;
5) Components of modern raster display systems;
6) Architecture of modern graphic processors;
7) NVIDIA GeForce GTX 480;
8) Evolution of graphic standards;
9) Concept of the user interface and requirement to it;
10) Design of the graphic user interface.

The program is developed in language of the high C# level. It can be used as independent studying, also methodical purposes.

This program consists of two windows: main (fig. 1) and reading (fig. 2).

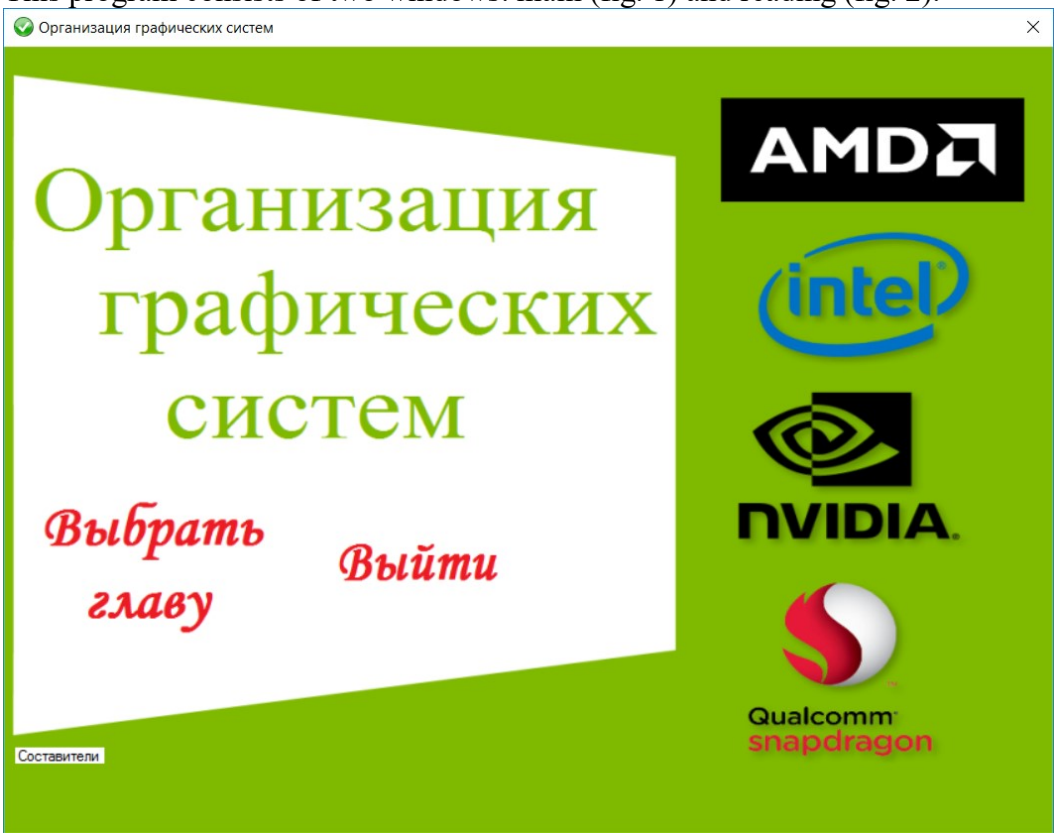


Figure 1 – Main window

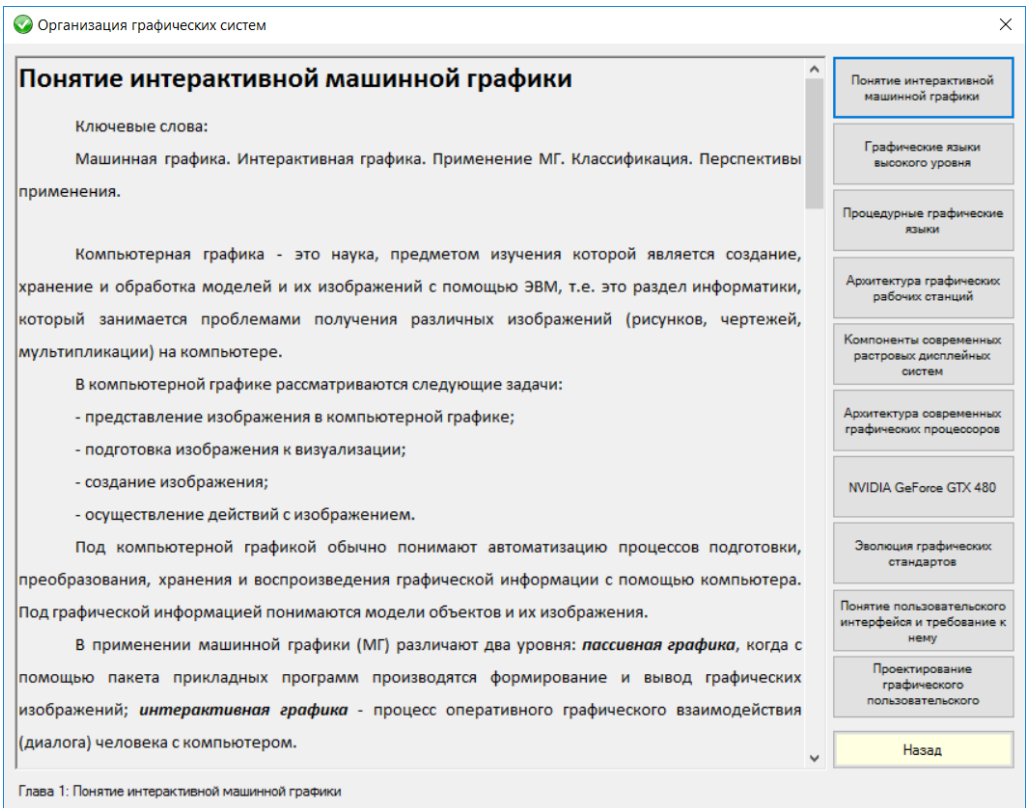


Figure 2 – Reading window

**2. The used technical means**

The recommended system requirements:
- WINDOWS 7, 8, 8.1, 10 OS;
- Processor: 1 GHz;
- Video card: 512 MB;
- Random access memory: 1 GB;
- Ratio of the parties of the screen 16:9.

**3. Special conditions of application and requirement of organizational, technical and technological character**

For work with the electronic textbook there is no need of creation of special conditions of application and implementation of special requirements of organizational, technical and technological character. Conditions of application and the requirement are defined by requirements to applied program and to hardware, listed above, and also implementation of license agreements when using the software, necessary for work of programs.

**4. Conditions of transfer of documentation or its sale**

This program is free and freely extended. It can be widespread by means of any carrier and on the Internet.

## ELECTRONIC RESOURCES OF SUPPORT OF RESEARCH WORKS

## ADVERTISING AND TECHNICAL DESCRIPTION "Concept of Interactive Musical Activity of School Students"

*Federal public budgetary scientific institution "Institute of Art Education and Cultural Science of the Russian Academy of Education"*
*Krasil'nikov I.M.*

***UDC** 373.1.013*
***GRNTI** 14.25.07, 18.41.07*

**1. Functional purpose of a product, scope, its restrictions**

The concept of interactive musical activity of school students assumes accommodation of music in the course of its creation or perception and is constructed on complementary interaction with an external source of its sounding.

It is intended for scientists, methodologists, employees of system of the basic and additional education.

Material is prepared within the FGBNU State task "Institute of art education and cultural science of the Russian Academy of Education" for 2016. Name of the state work: Carrying out research works (basic, applied, scientific researches and experimental developments).

The concept was developed within implementation of the "Development of Art Endowments of Children and Youth Means of Information and Communication Technologies" project on the subject "Theoretical Bases and Technologies of Development of Art and Creative Potential of Children and Youth on the basis of Information Technologies".

The concept assumes simplification of an operational component of musical activity of school students at the expense of the address to the elementary tools, elementary methods of game or vocalization and, at the same time, – enrichment of an art product by means of game of the teacher, reproduction of a soundtrack or computer patterns. Interactive musical activity of school students is their such activity which is directed to accommodation of music in the course of its creation or perception and is constructed on complementary interaction with an external source of its sounding. What allows to support high motivation of school students to this activity at any level of its mastering.

The concept can be applied when developing technology of familiarizing of all school students with various productive musical activity and perception of music.

**2. The used technical means**

– two-three synth keyboards;
– the elementary percussion and wind instruments (different)
– the equipment for reproduction of soundtracks.

**3. Special conditions and requirements of organizational, technical and technological character**:

Condition of success of practical implementation of the concept of interactive musical activity of school students is creation of the educational technology based on it including the training program, methodical and educational developments. The organizational requirement of realization is training of teachers for conducting musical occupations on the basis of this technology. Also involvement in educational process of professional musicians and collectives for the purpose of carrying out large musical and performing projects is desirable. Requirements of technical and technological character – existence of the musical instruments called above, and also equipments for reproduction of soundtracks, creative approach of the teacher to the embodiment in educational practice of provisions of the concept.

**4. Conditions of transfer of documentation on development or conditions of its sale**

Transfer of documentation on development or for sale is carried out only in coordination with the owner of FGBNU "Institute of art education and cultural science of the Russian Academy of Education" and the author – Krasilnikov I.M.

## ADVERTISING AND TECHNICAL DESCRIPTION "Calculation of Working Processes of Hybrid Power Cars of Volume Action" Program

*Federal public budgetary educational institution of the higher education "Omsk state technical university"*

*SHCHerba V.E., Pavlyuchenko E.A., Nosov E.YU., Nesterenko G.A., Lysenko E.A., Grigor'ev A.V.*

***UDC** 621.22*

***GRNTI** 55.03.14, 55.03.47, 55.38.29*

1. **Functional purpose of the program, scope, its restrictions**

The program is intended for calculation of working processes, account and power characteristics of hybrid power cars of volume action for the set parameters (pressure, productivity, properties of environment).

The program allows to receive data on working processes of hybrid power cars of volume action as they define economic efficiency of operation of the unit at the set design data, besides she allows to receive indicator charts of working cavities, charts of the movement of locking elements of automatic valves, productivity of a pump and compressor cavity, instant and integrated supply of gas and liquid.

The program consists of two settlement blocks:

1. Calculation of working processes of piston hybrid power cars of volume action.
2. Calculation of working processes of rotational hybrid power cars of volume action.

In settlement blocks of the program modern mathematical models of working processes of piston and rotational hybrid power cars of volume action with the concentrated parameters are realized.

The realized functions of the program:

1) Indicator charts of working cavities of hybrid power cars of volume action. Indicator charts are presented in the form of dependence of pressure of a working body on an angle of rotation of a power shaft.

2) Information on the movement of locking elements of automatic valves. These data allow to build the lines showing the provision of a locking element of the valve on height concerning a saddle depending on a rotor angle of rotation.

4) Productivity of a pump and compressor cavity. The program allows to calculate both instant, and integrated supply of gas and liquid. On the basis of these parameters the main specific characteristic – power consumption on one kilogram, or on one cubic meter of liquid and gas given to the consumer under nominal pressure pays off.

In general it should be noted that parameters which are received in the order by the researcher or the designer of hybrid power cars of volume action when using of the developed program give it the chance how to investigate working processes of the car, and to count its characteristics at design, and also to make optimizing calculations for receiving the best constructive option.

The interface of the program consists of the main dialog box which allows to choose the settlement module. After the choice of the settlement module the corresponding dialog box in which there are number of tabs – a tab of the description of a design, a tab of input of basic data and a tab of a conclusion of results in which temporary parameters for calculations are also set

opens. Results are output in the form of schedules and in the form of the table. And the area of a conclusion of schedules allows to display more than one function.

As a technical tool of development of the program for calculation of working processes, account and power characteristics of hybrid power cars of volume action in the set parameters, the program cover of Borland Delphi, the Object Pascal programming language used at the same time was chosen.

**2. The used technical means**

Calculation of working processes, account and power characteristics of hybrid power cars of volume action for the set parameters on the computer of the user are necessary for work of the program the following equipment rooms and software:

1. ° C: Microsoft Windows 7.
2. COMPUTER type: IBM PC-sovmest. Personal computer.
3. Frequency of the processor is not lower than 1 GHz.
4. Random access memory of 512 MB.
5. Existence not less than 100 MB of an empty seat on a disk.

**3. Special conditions of application and requirement of organizational, technical and technological character**

Conditions of application have to conform to the modern requirements imposed to operation of the software. The program does not demand installation of third-party packages of the software.

**4. Conditions of transfer and sale of program documentation**

The program calculation of working processes, account and power characteristics of hybrid power cars of volume action for the set parameters and documentation to it can be transferred to the interested person or the organization on the basis of the contract with OMGTU and authors according to the current legislation.

## ADVERTISING AND TECHNICAL DESCRIPTION "Chapter 1" a phenomenon of traditional culture and its understanding" in the monograph "Pedagogical Potential of Traditional Culture in Formation of Spiritual and Moral Qualities of the Personality"

*FGBNU "Institute of art education and cultural science of Russian joint stock company"*
*Kashekova I.EH., Kolosova S.N., Kononova E.A., Medkova E.S., Sevryukova N.V.*

***UDC** 378*
***GRNTI** 14.35.07, 18.01.39*

1 chapter "Phenomenon of traditional culture and its understanding" of the collective monograph "Pedagogical Potential of Traditional Culture in Formation of Spiritual and Moral Qualities of the Personality" contains 4 paragraphs:

1.1 "An art and poetic phenomenon of a national calendar and its educational value",

1.2. "Familiarizing of pupils with understanding of an art and creative phenomenon of national crafts of Russia";

1.3. "Narodnopoetichesky images in the course of patriotic education at literature lessons at modern school";

1.4. "Ways of updating of national traditions of attitude through development of traditional culture of the people of Russia".

Purpose: to develop the contents and methodical recommendations about identification of pedagogical potential of traditional culture in formation of spiritual and moral qualities of the personality.

Content of spiritual and moral development of the personality depends on basic national values which enter: conscience, decency, nobility, responsibility, humanity, call of duty, the patriotism projected on problems of real life. It is important that these representations corresponded to universal values and were an integral part of the relations to the country, a family, society, culture, mankind in general.

Modern highest degree of information on the one hand provides the person with knowledge, actual for a certain moment, but, at the same time, increases its vulnerability. Especially it is dangerous at children's and teenage age when basic values are not created yet. It imposes special responsibility on child care educational institutions and on developers of educational programs, authors of educational and methodical sets in humanitarian objects, and also programs of additional education. Use of potential of national culture helps to create complete space of spiritual and moral development and education of trained. Development of cultural traditions, gives rich opportunities patriotic, spiritually – moral education of children. Validity of such approach in accumulation of the diverse experience of an existing of the person which is passed on from generation to generation through work, cultural heritage, art and spiritual traditions. Pedagogical resources are: systemacity, sequence, fascinating contents, expressive striking examples, moral cultural examples of behavior of heroes of myths, fairy tales, national epos, real heroes of the Fatherland; system knowledge; the developing environment; art and creative activity.

In the paragraph "Art and Poetic Phenomenon of a National Calendar and Its Educational Value" functional and spiritual components of a national calendar and its teaching and educational potential used at all times are considered.

Familiarizing of the child with culture of the people is important for revival of genetic and cultural memory of children, understanding of the place and the role in cultural ties. Now knowledge of children of culture of the people of an obryvochna, is unsystematic, does not make a complete picture in consciousness of the child. The idea of connection of separate data in a complete, wide picture of the world, such what our ancestors saw it, can be realized at development of a complex of a national calendar. The complex of a national calendar has the developed structure, interrelations, laws, and on value for the people, according to researchers of the Russian culture, it is the encyclopedia of human life and a well of popular wisdom.

The order in calendar became at the same time and result of long experience of existence, supervision over the nature, developments of consciousness of the person, and a necessary condition of development of a civilization. People, having begun to realize frequency of natural phenomena (change of day and night, seasons), understood need of measurement of time. The calendars which arose in different regions of Earth received the name of national calendars. Each people in own way mastered ways of calendar, developed the calendar with very large and quite small units. Slavs were not an exception in this process also. The national calendar of east Slavs became the original phenomenon of the Russian traditional culture.

Acquaintance to a national calendar at elementary school represents the optimum complex integrating various areas of knowledge in education: about natural cycles and the phenomena, about geographical features of the district and the feeding landscape; about the historical collisions occurring here during the different periods and about heroic feats; about local customs and folklore, folk beliefs, bylinas and fairy tales, specifics of decoration of clothes, household items and instruments of labor, All semantics of national representations found reflection in a yearly cycle.

In the paragraph "Familiarizing of Pupils with Understanding of an Art and Creative Phenomenon of National Crafts of Russia" specifics are revealed and experience of acquaintance of the features of national crafts of Russia which are trained with traditions of national culture on the example of development is reflected.

According to N. A. Berdyaev, feature of familiarizing is its informative sense therefore familiarizing is considered as a necessary step to knowledge. Familiarizing is turned to an inner

world of the person, leads to search of an essence of ideas, meanings and focuses attention on the main issues of knowledge: whether "the world is learned and what is learned in the world?".

Familiarizing of pupils with understanding of an art and creative phenomenon of national crafts of Russia provides education of the child on the principle of a kulturosoobraznost. It means that the child, perceiving work of folk art, not only develops ability to learn, but also forms ability to worry fine, esthetically attractive, sublime. At the same time it is necessary to consider individual conditions of the social environment in which the preschool child develops, interacts with peers, parents and other people. The role of national culture and ethnopedagogics in moral, esthetic education of younger generation is revealed in P.P. Blonsky, D. S. Likhachev, B. M. Nemensky's works, etc.

Familiarizing of children with understanding of an art and creative phenomenon of national crafts of Russia – process multistage: it should be seen off systematically, since the preschool childhood and it is forward (depending on extent of development of children) to form interest of children in national crafts and at preschool and younger school age, actively developing at youthful age.

Efficiency of work with national and poetic images at literature lessons in the course of formation of national consciousness of the identity of the school student is presented in the paragraph "Narodnopoetichesky Images in the course of Patriotic Education at Literature Lessons at Modern School".

In the paragraph need of patriotic education at literature lessons in the course of training of school students in the analysis of a work of art is proved, expediency of active attraction of national and poetic images in the course of patriotic education is illustrated, and also the system of development of the lexico-semantic comment in the course of the analysis of a work of art is developed.

At the present stage of a development of education lessons of literature have to be directed, first of all, to education of spiritually mature personality. Such strategy is directly connected with need of patriotic education which needs to be carried out in the course of development of works of art of the Russian classical literature. Scrupulous work with the art word leads to thin understanding of outlook of the author who, in turn, expresses the relation to the native language, to native culture. Disclosure of depth of the national and poetic images reflected in creativity of most of the Russian poets and writers leads not only to development of key skills of analytical work, but to understanding and acceptance of universal values.

In the paragraph "Ways of Updating of National Traditions of Attitude through Development of Traditional Culture of the People of Russia". the research problem of potential of the polycultural educational environment and a role of art activity in creation of the polycultural environment was solved.

Methods of formation of interethnic tolerance are developed on the basis of profound studying of traditional (folklore) cultures of the people of the Russian Federation. In the paragraph mechanisms of the solution of the following tasks are proposed:

A) Understanding of a problem of a ratio of concept of the national identity including attachment to the native earth, culture and the basic pictures of the world which are formed on the basis of familiarizing with values of traditional (folklore) cultures of the people of Russia as key in the course of fostering patriotism and interethnic tolerance.

B) Research of a possibility of application of all-methodological system approach from positions of unity of an invariant community of mythological structures of traditional (folklore) cultures of the people of the Russian Federation.

C) Definition basic mythological structures and mythemes of traditional cultures on which the unity and a variety of the pictures of the world defining national mentality is formed.

D) Realization of two-level system of teaching bases of traditional cultures of the people of Russia as means of formation of encyclopedic knowledge about a community of structure of folklore culture in general and specifics of its national options.

# ADVERTISING AND TECHNICAL DESCRIPTION "Marketing Approaches to the Choice of Effective Developer Projects"

*Ponomarev M.A., Nikishkin V.V., Tverdohlebova M.D., Lysenko A.V., Zul'fugarzade T.EH., Koshkin A.P*

***UDC** 378*
***GRNTI** 14.35.07, 06.01.11*

## 1. Functional purpose of a product, scope, its restrictions

The modern terms of development of the Russian economy are dictated by the amendments for most of investors. Ways of an investment of financial means have to be exposed now to the most careful analysis since changes of a market situation radically influence potential profitability of those, or other objects.

Subject of this research is efficiency of use of a ground under commercial building taking into account a situation in the market of commercial real estate and capacity of the city.

Samara and the Samara region have the advanced diversified economy based on strong industrial sector and communication opportunities. Stable economic indicators cause high fiscal capacity of Samara. The credit rating of Samara of "BB+", "In", "AA rus" (Fitch Ratings) is the best characteristic of investment appeal of the city. High capacity of domestic market of Samara is confirmed by high rates of the housing construction which is conducted in the city. Also the sector of commercial construction is active. The investors coming to Samara often get the personified support to implementation of business projects from the city administration.

The developed methodical approach to creation of the concept of rational development of the land plot under commercial real estate by developers in the territory of the Russian Federation is result of the performed work. Authors carried out the analysis of the market of the city of Samara, recommendations for the LLC Investstroitel company planning placement of object of commercial real estate in this city are offered.

Relevance of this subject is caused by need of the careful analysis of possible options of investment into commercial real estate which only amplifies in a situation of the current economic instability.

Scientific novelty is concentrated on development of methodical conceptual approach to the choice of a rational way of development of the land plot for commercial real estate in the Russian cities.

Owing to the realized scientific research the following works were performed:

1) the analysis of social and economic tendencies of the region is carried out;
2) the analysis of a standard of living of the population is carried out;
3) the analysis of the market of commercial real estate Samara is carried out;
4) the analysis of production and social infrastructure of the city is carried out;
5) the analysis of the existing competition is carried out;
6) the analysis of a location of potential object is carried out;
7) recommendations about the choice like object of commercial real estate are made.

The tasks set in work are solved fully, results are planned to use in the LLC Investstroitel company, and also can be used in other companies developers specializing in commercial real estate.

## 2. The used technical means

The used technical means: computer software, mobile devices.

## 3. Special conditions and requirements of organizational, technical and technological character

Special conditions and requirements of organizational, technical and technological character: research was conducted under the leadership of the director of Educational scientific

center of retraining and professional development of employees of the higher school of REU of G.V. Plekhanov Nikishkin V. V.

**4. Conditions of transfer of development or its sale**

Conditions of transfer of documentation or its sale: the right for scientific work belong to authors and can be transferred to the third parties.

## ADVERTISING AND TECHNICAL DESCRIPTION "Imitating Model of an Infocommunication Network of a Special Purpose on the basis of Use of Mechanisms of Prioritization of a Traffic"

*Odoevskij S.M., Vorob'ev I.G., Padishin S.A., CHapurin E.N., Tkachev D.F.*

***UDC*** *519.876.5*
***GRNTI*** *28.17.33, 28.17.23*

**1. Functional purpose of the program, area of its application, its restriction**

Purpose of the program

The imitating model of an infocommunication network of a special purpose on the basis of use of mechanisms of prioritization of a traffic is intended for modeling of process of functioning of an infocommunication network of a special purpose, and also calculation of the main indicators characterizing quality of rendering of services of communication to officials of various categories.

The developed imitating model allows to project various communication networks, to adjust properties of separate elements of model, to plan and make experiments on communication network model, to make the required assessment.

Distinctive features of the developed model is: the accounting of bandwidth of communication channels, a possibility of flexible reorganization of structure of a network for the necessary purposes, and also use of mechanisms of prioritization of a traffic on the basis of categories of officials. Simplicity of work of imitating model gives ample opportunities on its application in the analysis of the projecting or already existing communication network of a special purpose.

The imitating model is realized in the built-in programming language in the interactive environment of modeling Mathcad of version 2015.

Short description of work

The developed imitating model of an infocommunication network of a special purpose on the basis of use of mechanisms of prioritization of a traffic allows to imitate network functioning of communication of a special purpose taking into account the set input parameters and the adjusted prioritization of a traffic for various categories of officials on the basis of which quality of providing the set services is estimated.

As criterion for evaluation of quality of rendering of services of communication the probability of refusal in providing various services is considered, and also the massif of intermediate values for the analysis of functioning of model is generated.

The imitating model is realized in the built-in programming language in the interactive environment of modeling Mathcad of version 2015.

Use of model (the file with the .xmct expansion) is carried out by its start by means of the Mathcad program then the window of working area in which the user can begin work will appear.

Further the task of basic data within a work sheet interactive a development environment is made.

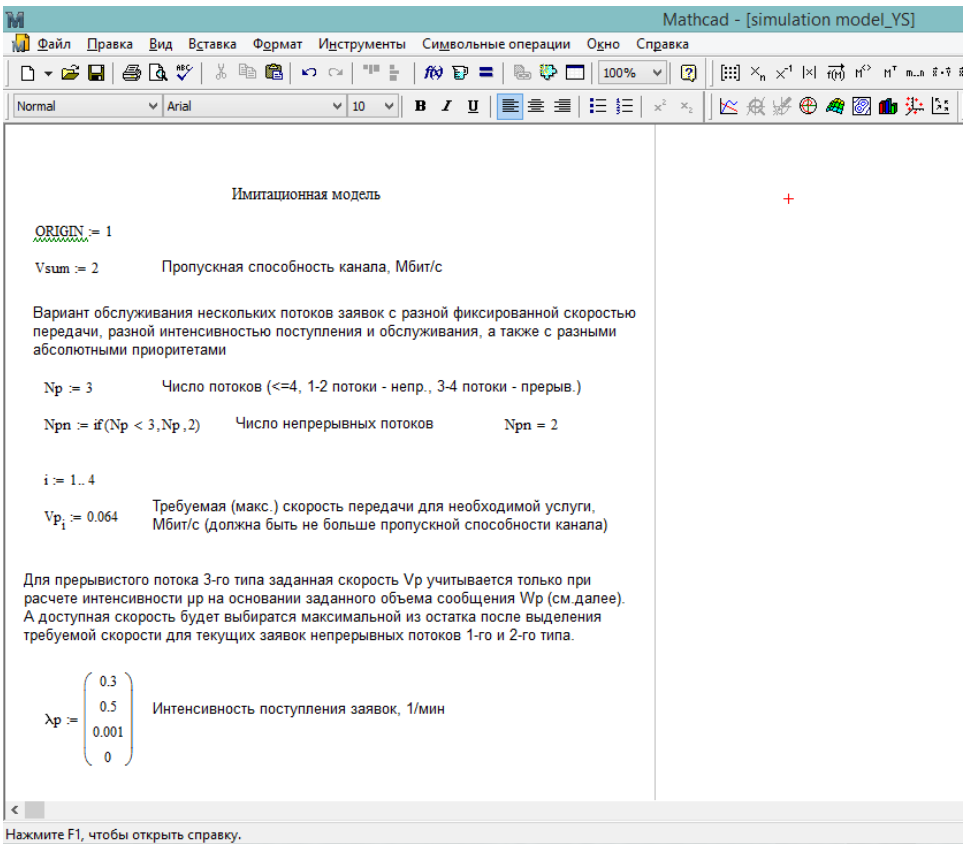


Figure 1 – A work sheet of model in the program to the Mathcad environment

As basic data for imitating model of an infocommunication network of a special purpose on the basis of use of mechanisms of prioritization of a traffic the following values of indicators are set:

*N* – quantity of communication centers;

*M* – quantity of communication channels;

*Vsum* – the capacity of the channel, Mbps;

*Np* – number of streams (there have to be less than 4, 1-2 continuous streams, 3-4 preryvny streams of data transmission);

*Vp* – the required (maximum) speed of transfer for necessary service, Mbps;

*λp* – intensity of receipt of applications, 1/mines;

*μp* – intensity of service of applications, 1/mines;

*rp* – a priority of categories of officials.

Program scope

The developed imitating model of an infocommunication network of a special purpose on the basis of use of mechanisms of prioritization of a traffic can be used at design of an infocommunication network of a special purpose.

Restrictions of use of the program

The developed imitating model is calculated:

for work under management of an operating system of Microsoft Windows, Mac OS and Linux family;

on the user with basic skills of use of the software.

Restrictions for modeling:

the maximum quantity of communication centers – 1000.

**2. Technical specification on the program**

2.1 Structure of the software product

In a basis of work of imitating model of an infocommunication network of a special purpose on the basis of use of mechanisms of prioritization of a traffic the algorithm presented in figures 2.1-2.4 is put.

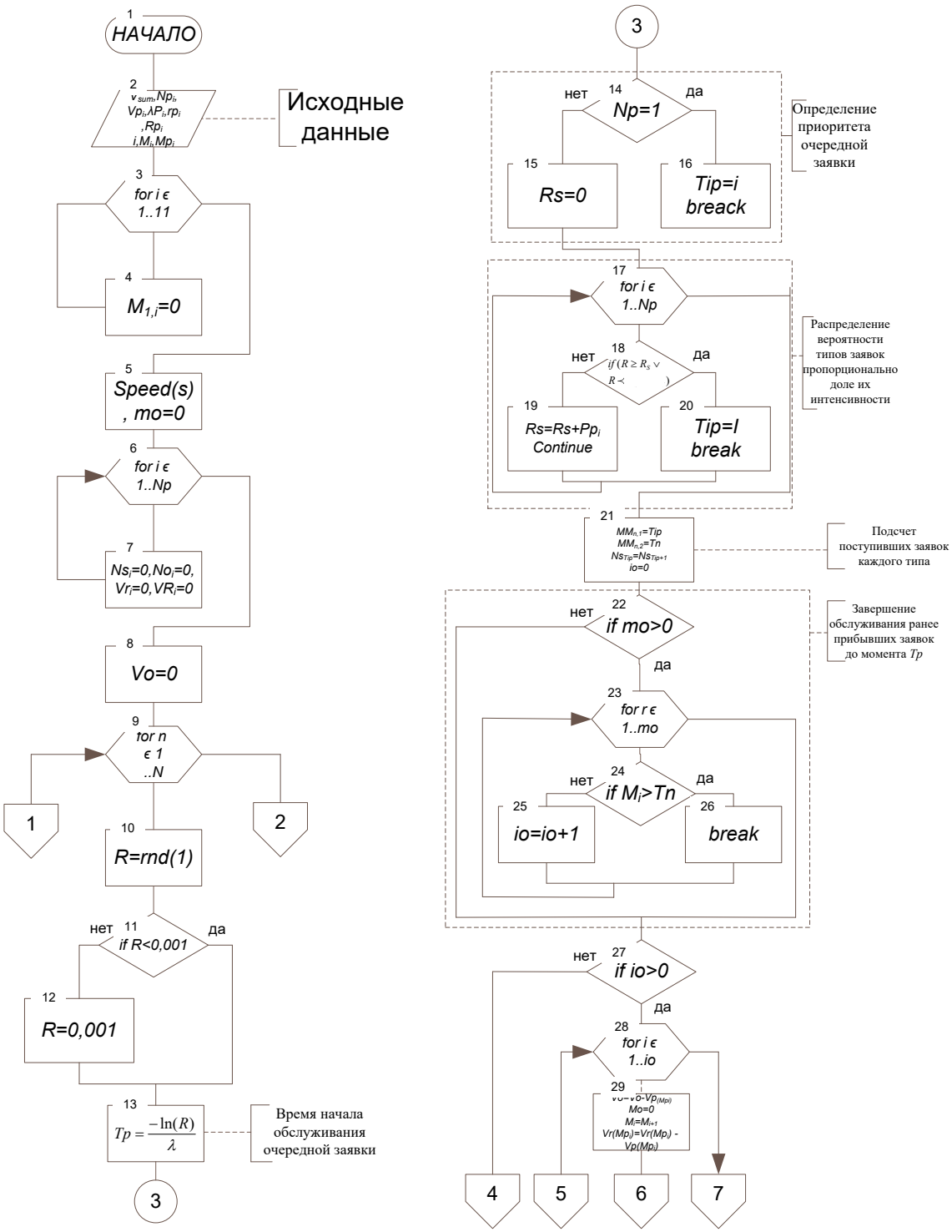


Figure 2.1 – Algorithm of functioning of model

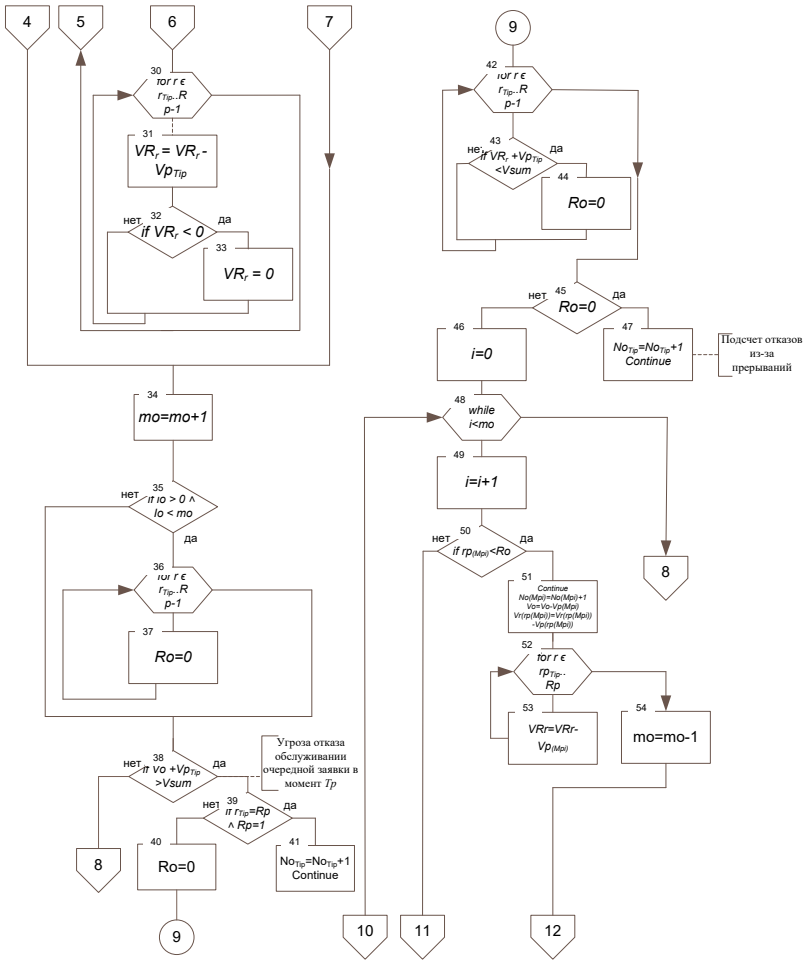


Figure 2.2 – Algorithm of functioning of model

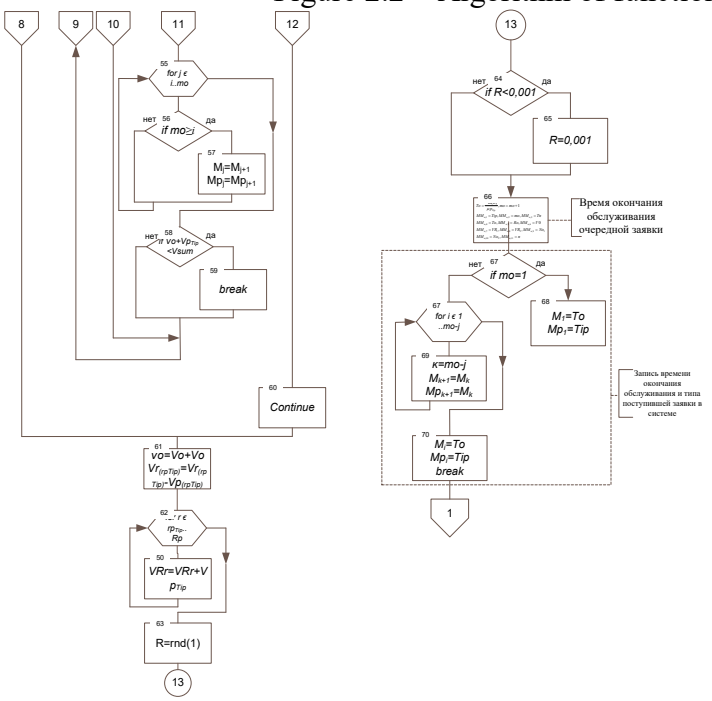


Figure 2.3 – Algorithm of functioning of model

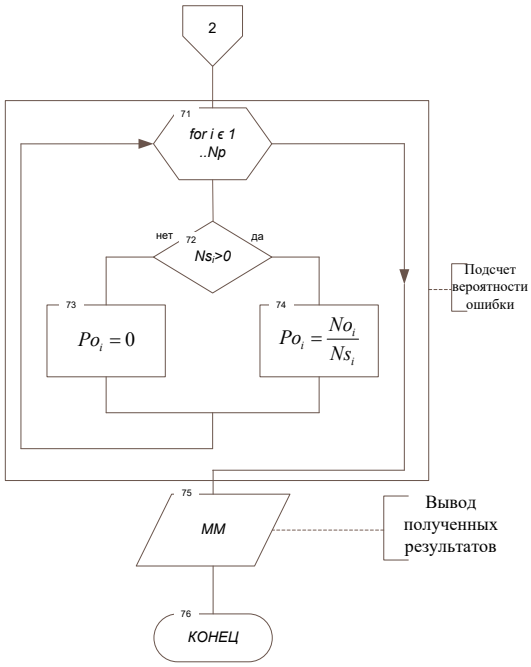


Figure 2.4 – Algorithm of functioning of model

2.2 The applied software

For realization of the developed imitating model the programming language in the interactive environment of modeling Mathcad of version 2015 is used.

2.3 Hardware requirements

For normal functioning of imitating model the following requirements to hardware-software part of a workplace of the user are imposed:

1. Minimum:

– the Intel or AMD Single Core processor with a frequency not lower than 1 GHz;
– random access memory with a capacity not less than 2 GB;
– the integrated video adapter;
– an empty seat on the system section of the hard drive 550 Mb;
– operating system of Microsoft Windows XP, Linux, Mac OS.

2. Recommended:

– the Intel or AMD Dual Core processor with a frequency of 2 GHz;
– random access memory with a capacity of 4 Gb;
– the integrated video adapter;
– an empty seat on the system section of the hard drive 550 Mb;
– Windows 10 operating system.

**3. Special conditions of application**

The imitating model is compatible to any versions an operating system of Microsoft Windows, Linux, Mac OS family.

**4. Conditions of transfer of program documentation or its sale**

The imitating model of an infocommunication network of a special purpose on the basis of use of mechanisms of prioritization of a traffic is developed by staff of Military academy of communication.

Transfer of the software product to the third parties, and also educational institutions, institutions of other ministries and departments is carried out on a contractual basis and is solved directly with authors, at their written consent.

Concerning acquisition and sale of the software product to contact the address:

194064, St. Petersburg, Tikhoretsky Avenue of 3, FGCVOOU WAUGH "Military academy of communication of Marshall of the Soviet Union S. M. Budenny" Ministries of Defence of the Russian Federation.
Phone: 8 (981) 130-63-98
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Group of authors
FGCVOOU WAUGH "Military academy of communication of Marshall of the Soviet Union S. M. Budenny" Ministries of Defence of the Russian Federation:
Doctor of Engineering, professor Odoevsky Sergey Mikhaylovich;
candidate of military sciences, associate professor Vorobyov Igor Gennadevich;
candidate of military sciences, associate professor Padishin Sergey Aleksandrovich;
Candidate of Technical Sciences Tkachyov Dmitry Fedorovich;
Chapurin Evgeny Nikolaevich.

## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic textbook "Power Supply of Devices and Systems of Telecommunications" (direction 29.00.00 "Military education", profile- specialist programme)"

*Budko P.A., Vinogradenko A.M.., Gajnullin R.R , Gunkin K.YU., Mihajlov A.YU., Kashkirov A.A., CHihachev A.V*

***UDC*** *378*
***GRNTI*** *14.35.07, 45.53.51, 45.53.99*

**1. Functional purpose of the program, area of its application, its restriction**

**Purpose of the program**

The developed electronic textbook "Power Supply of Devices and Systems of Telecommunications" **"Power supply devices and systems of telecommunications"** is intended for demonstration by the trainee of a training material in text form, the training multimedia material. The possibility of the current control of assimilation of a training material trained in the form of the separate interactive blocks of control determined by educational standards is provided in the electronic textbook.

Use of the electronic textbook assumes besides the text, opening of audiofiles, videos, copies of various documents.

Feature of application of the electronic textbook "Power Supply of Devices and Systems of Telecommunications" is the fastest training due to consecutive control of digestion of the studied material, and also convenient search of necessary information.

The electronic textbook "Power Supply of Devices and Systems of Telecommunications" **"Power supply devices and systems of telecommunications"** is realized with use of a program cover of eAuthor.

**Short description of work**

The electronic textbooks realized on the basis of various program covers allow to solve problems of distance learning with success.

The electronic textbook "Power Supply of Devices and Systems of Telecommunications" is used as the main literature on discipline by "Power supply of devices and systems of telecommunications", and also as additional literature when studying other disciplines for training of the listeners, cadets and students who are trained at military departments of higher education institutions of communication.

Work of the electronic textbook begins with **the Table of contents tab** having an appearance according to figure 1 where work with the main materials of the textbook (the choice of chapter of the textbook) is performed.

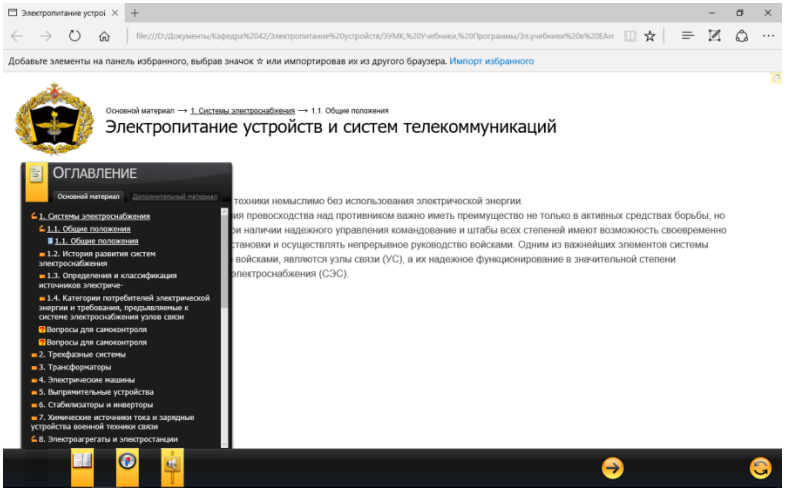


Figure 1 – Window of a table of contents of the textbook

Further on **the Questions for Self-checking tab**, according to figure 2, to the trainee questions are set, answering which, it is possible to make independently examination on the studied material.

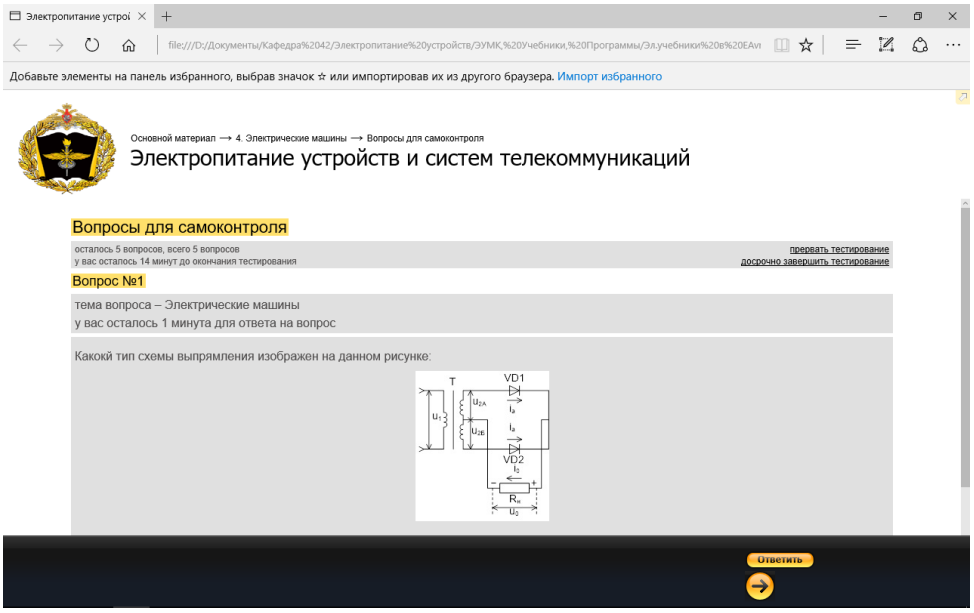


Figure 2 – Self-checking window

Also one of opportunities of the electronic textbook is search of material in in advance noted bookmarks. It allows to return to necessary material (fig. 3) most quickly.

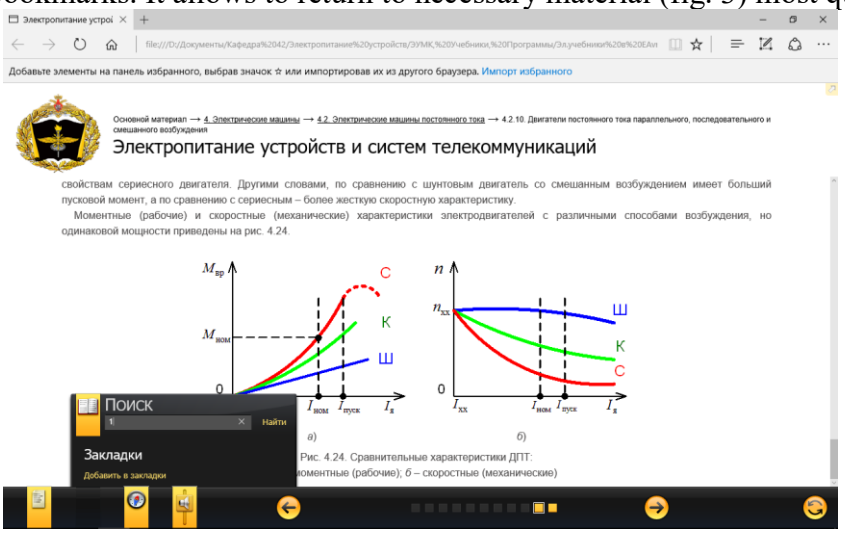


Figure 3 – Window of search of a training material in bookmarks

For evident studying of separate subjects of the textbook it is possible to use video records (**the "additional material" tab**, figures 4, 5) where it is also possible to use a training material in an interactive form.

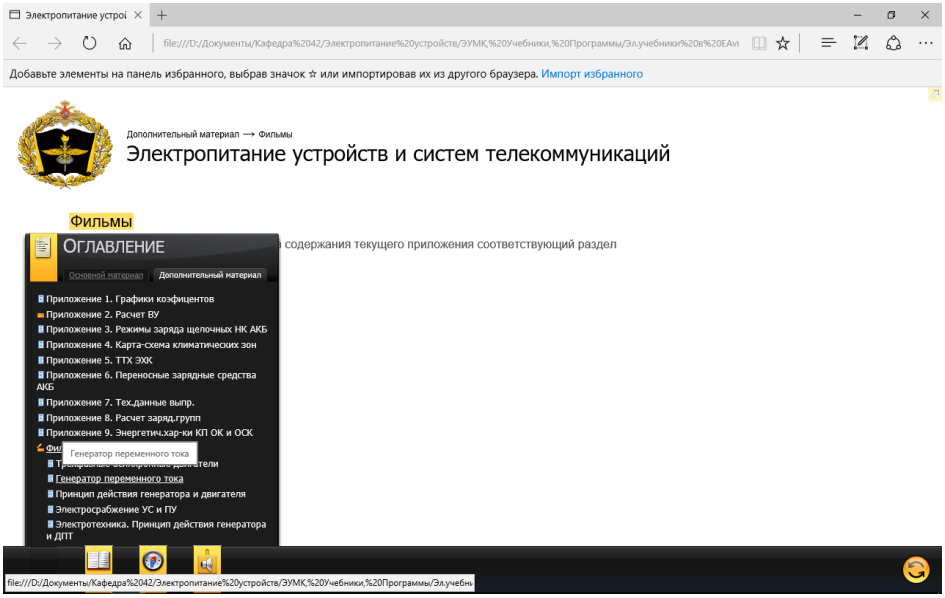


Figure 4 – Window of additional materials

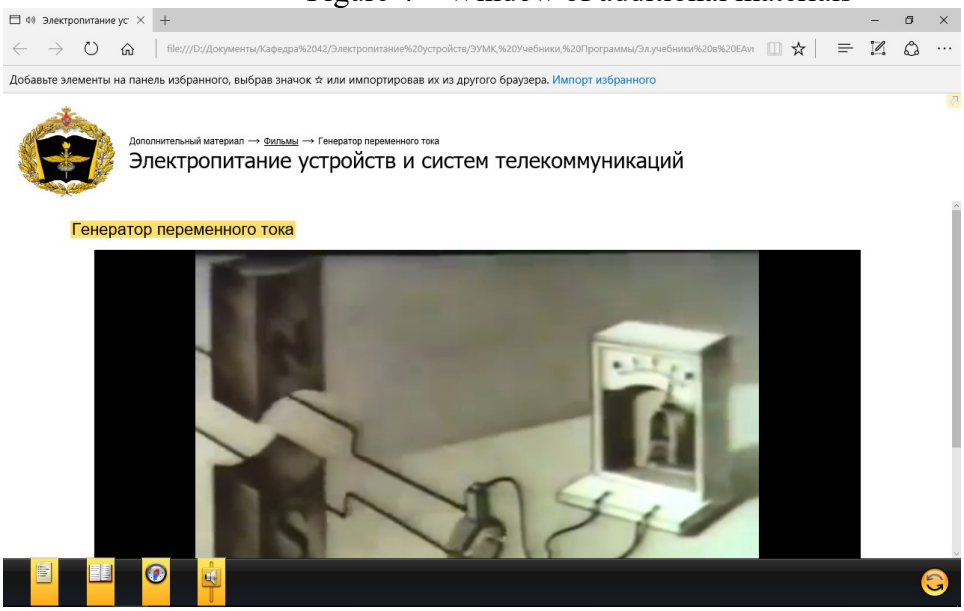


Figure 5 – Window of video records

**Program scope**

The electronic textbooks realized on the basis of various program covers allow to solve problems of distance learning with success.

The electronic textbook "Power Supply of Devices and Systems of Telecommunications" can be used as the main literature on discipline "Power supply of devices and systems of telecommunications", and also as additional literature when studying other disciplines for training of the listeners, cadets and students who are trained at military departments of higher education institutions of communication.

**Restrictions of use of the program**

This electronic textbook is calculated:

for work under management of an operating system of Microsoft Windows family;

on the user with basic skills of use of the software.

**2. Technical specification on the program**

**2.1 Structure of the software product**

The structure of the developed electronic textbook has an appearance according to figure 6.

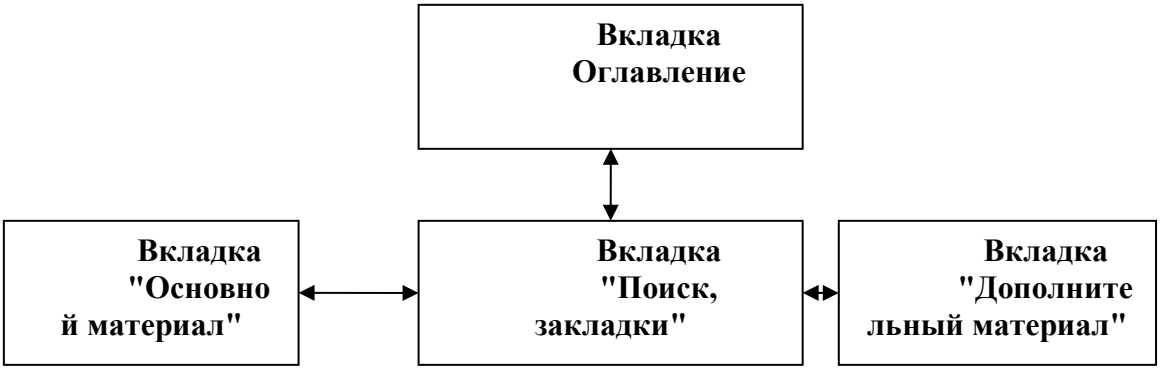


Figure 6 – Structure of the electronic textbook

**2.2 The applied software**

For implementation of the developed electronic textbook the operating system of Microsoft Windows 8 is used.

**2.3 Hardware requirements**

For normal functioning of the program the following requirements to hardware – program part of a workplace of the user are imposed:

minimum:

– the Intel or AMD Single Core processor with a frequency not lower than 1 GHz;
– random access memory with a capacity not less than 64 Mb;
– the integrated video adapter;
– an empty seat on the system section of the hard drive 40 Mb;
– operating system of Microsoft Windows XP;

recommended:

– the Intel or AMD Dual Core processor with a frequency of 2 GHz;
– random access memory with a capacity of 256 Mb;
– the integrated video adapter;
– an empty seat on the system section of the hard drive 40 Mb;
– Windows 7 operating system.

**3. Special conditions of application**

The electronic textbook is compatible to any versions an operating system of Microsoft Windows family.

**4. Conditions of transfer of program documentation or its sale**

The electronic textbook "Power Supply of Devices and Systems of Telecommunications" is developed by staff of Military academy of communication.

Transfer of the software product to the third parties, and also educational institutions, institutions of other ministries and departments is carried out on a contractual basis and is solved directly with authors, at their written consent.

Concerning acquisition and sale of the software product to contact the address:

194064, St. Petersburg, Tikhoretsky Avenue of 3, FGCVOOU WAUGH "Military academy of communication of Marshall of the Soviet Union S. M. Budenny" Ministries of Defence of the Russian Federation.

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## ADVERTISING AND TECHNICAL DESCRIPTION "Model of Rendering of Services in an Infocommunication Network of a Special Purpose with Use of Mechanisms of Prioritization of a Traffic"

*Odoevskij S.M., Vorob'ev I.G., Vorob'ev L.V., Padishin S.A., CHapurin E.N., Tkachev D.F., Kuznecov I.YU.*

***UDC** 378*
***GRNTI** 28.17.33, 28.17.23*

**1. Functional purpose of the program, area of its application, its restriction**

Purpose of the program

The model of rendering of services in an infocommunication network of a special purpose with use of mechanisms of prioritization of a traffic is intended for calculation of the main indicators characterizing quality of rendering of services of communication to officials of various categories.

The developed model allows to model process of granting various communication services to officials, to change parameters of the enclosed objects, to output results of modeling in various forms and to carry out any computer experiments.

The possibility of use of various mechanisms of ensuring quality of rendering of services of communication is provided in model, including – mechanisms of prioritization of a traffic on the basis of division of officials on categories.

The model is realized in the environment of object-oriented modeling of AnyLogic PLE 7.3.0.

Hardware-software requirements: Intel/AMD 1GHz; RAM 520 Mb; empty seat of 180 Mb; it is calculated on application in the local computer network with Microsoft Windows OS.

Short description of work

The model of rendering of services in an infocommunication network of a special purpose (SN X) with use of mechanisms of prioritization of a traffic is constructed on discrete and event modeling – a form of imitating modeling in which modeling of functioning of system is presented as chronological sequence of events. Each event takes place at a given time and change of a condition of system marks. The model consists of a certain number of blocks, each of which carries out the function.

The presented model is developed for application in various areas for research of functioning of an infocommunication network of a special purpose.

Work of model begins with the Imitation tab having an appearance according to fig. 1.

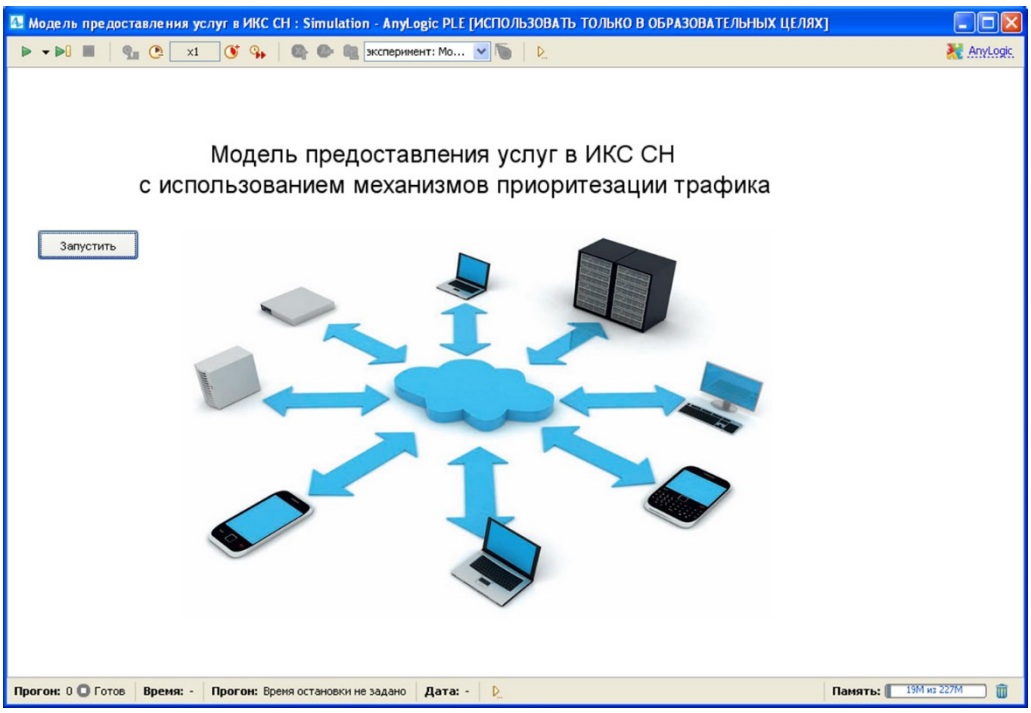


Figure 1 – Window of start of model

In fig. 2 the main tab of model on which the fragment of an infocommunication network of a special purpose is presented is presented.

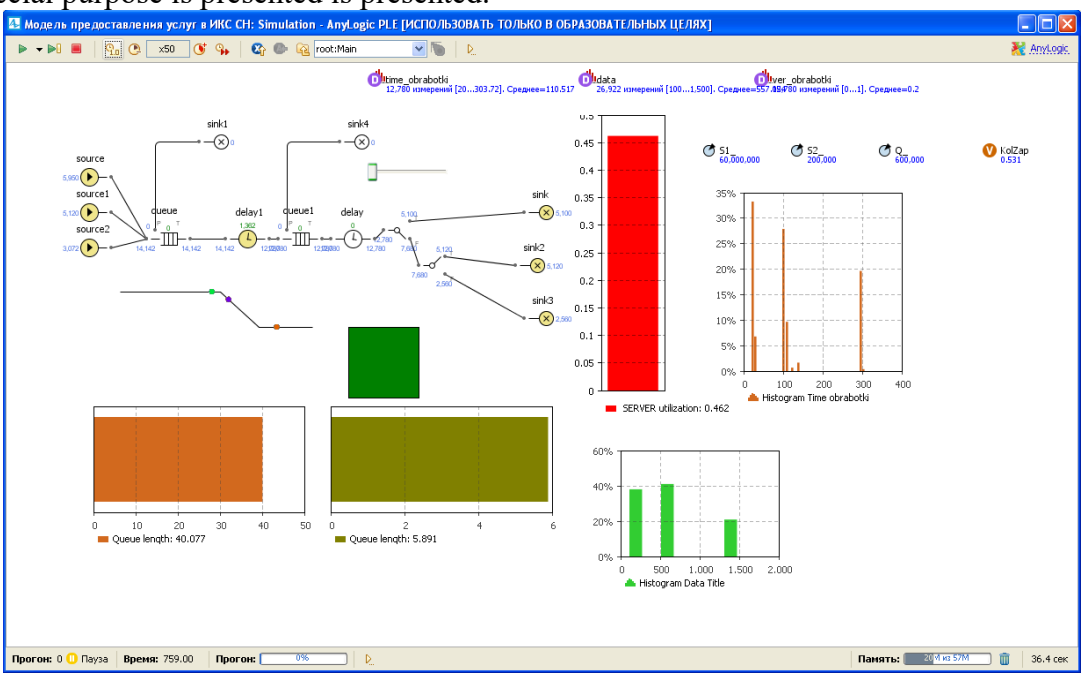


Figure 2 – Main tab of model

The program allows to generate and consider at the same time several flows of applications *of U* with various parameters of functions of distribution of intervals of time (for example, according to number of subscribers *of A* on a communication center and with number of various required services Ua by each of them *of a* = 1, …, *A*). At the same time each separate flow of applications for services of real time is characterized by the intensity □$_u$, the speed of a Vu broadcast and average time of service of □u, and also *ru* priority ∈[1., *U*].

Each separate flow of applications for data transmission services is also characterized by the intensity □$_u$ and a priority *of ru* ∈[1., *U*]. Concrete speed at the same time is not fixed, but can be limited to some size Vu Vsum ≤where *Vsum* – the total available speed (capacity) for all services provided by the boundary switch.

Instead of the average time of service of □u which is set for services of real time for services of data transmission the average volume of one message (a portion of data) *of Wu* is set. The specified □u parameters – for services of real time and *Wu* – for services of data transmission are used as parameters of laws of distribution at generation of casual values of duration of service and/or volume of data for each next application.

In the course of modeling the structure of the served applications and their state, time-dependent is constantly controlled. The main traced timepoints after which approach resources of capacity are redistributed and sum up the intermediate results of service of applications, the moments of receipt of applications and the moments of the end of their service are, first of which form an external cycle of events, and the second – internal (between each two next moments of receipt of applications).

At the time of receipt of the next application depending on the current employment of the general resources of capacity of the modelled switching device, and also from a ratio of priorities of already served applications and again arrived application the next events are fixed:

– if for the new application of resources unoccupied still it is enough, then the Vu broadcast speed resource is allocated to it requested (for services of real time) or greatest possible (for data transmission services), and holding time (for services of real time) or the transferred information volume is reckoned (for data transmission services);

– if for the new application of unoccupied resources it is not enough, then comparison of its priority with priorities of already served applications is carried out. If the priority at all already served applications is higher (or equal for services of real time), than at again arrived application, then refusal in service of the next application is fixed (for services of real time) or it is put in waiting list for service (for data transmission services). If the arrived application for services of data transmission has an equal priority with *n* earlier arrived applications for data transmission services which are already occupying some resource of capacity *of V*, then it begins to be served, dividing the specified resource with earlier arrived applications equally, i.e. from speed of (V/n+1);

– if among already served applications there are applications of lower priority, than a priority of the new application, and the resource occupied with them is not less, than the resource demanded for it, then interruption in service of earlier arrived applications is fixed (for services of real time) or they are transferred to a condition of expectation (for data transmission services).

It should be noted that for a correctness of modeling of process of service of the mixed flows of applications of services of real time and on data transmission services, the last have to have always lower priority, than the first (though the program allows to consider and the return ratios of priorities, confirming their inexpediency because of sharp increase of number of refusals in rendering of services of real time with the required limited speed which is not allowing redistribution in time).

On time interval between the moments of receipt of the next applications the internal cycle of calculation of the possible moments of the end of service of earlier arrived applications on end of holding time for services of real time or in exhaustion of volume of the transferred message (a portion of data) is carried out. At the same time the released capacity resource at once is redistributed between continuing to be served (and/or expecting the beginning of service in turn) applications for services of data transmission of the most senior priority.

Process of modeling comes to the end after the end of generation and processing of the set total number of the arrived applications (on all services).

During modeling at the moments of emergence of each next application their quantity *by Nu* for each distinguishable service u is counted (with the type, intensity, a priority, speed of transfer and parameters of the law of distribution of duration or volume).

At the moments of completion of service of applications for services of real time is counted the number of applications *of Nu.otk* to which it was refused service (at receipt of the application) or service of which was interrupted (because of receipt of applications of more senior priority), and for services of data transmission the total transferred volume of data *of*

*Wu.sum* and total time *of Tu.sum* between the moments of the beginning and the end of transfer of data to each next portion is counted.

On the basis of the specified results of calculation probabilistic values of rendering of services in the form of an assessment of probability of refusal pay off $\hat{P}_{u.отк}$ for services of real time and an assessment of average speed of transfer $\hat{V}_{u.ср}$ for data transmission services:

$$\hat{P}_{u.отк} = N_{u.отк} / N_u, \quad \hat{V}_{u.ср} = W_{u.сум} / T_{u.сум}.$$

For data transmission services the developed model allows to estimate also functions of distribution of time of transfer of separate messages (portions of data) and flowing (it is conditional – instant) the used (available) speed of transfer in the form of the corresponding histograms.

Program scope

The developed model of rendering of services in an infocommunication network of a special purpose with use of mechanisms of prioritization of a traffic can be used at design of an infocommunication network of a special purpose.

Restrictions of use of the program

This model is calculated:

for work under management of an operating system of Microsoft Windows, Mac OS and Linux family;

on the user with basic skills of use of the software.

Restrictions for modeling:

the maximum number of knots – 65535;

maximum the number of subscribers – 65535.

**2. Technical specification on the program**

2.1 Structure of the software product

The developed program is based on modeling of a chain of events, beginning from the entrance requirements coming to casual timepoints, occupations and release of the device of switching according to casual character of duration of processing of each requirement, the room and reading events from turn according to discipline of service and the used prioritization mechanisms.

Parameters of the main objects of model are presented in tables 1-5.

Table 1 – Object "Model"

| | |
|---|---|
| The main | |
| Units of model time | seconds |
| Numerical methods | |
| Decision method | Euler |
| Method of the | The changed Newton |
| Method of the | RK45+Newton |
| Absolute accuracy | 1.0E-5 |
| Temporary accuracy | 1.0E-5 |
| Relative accuracy | 1.0E-5 |
| The fixed step on | 0.001 |

Table 2 – Object of "Source"

| | |
|---|---|
| The main | |
| Population of agents | false |
| Generic Parameters | [Generic Parameter Substitute: Inquiry] |
| Population of agents | false |
| Generic Parameters | [Generic Parameter Substitute: Inquiry] |
| Movement | |

| | |
|---|---|
| Initial Speed Code | (10; MPS) |
| Specific | |
| On the presentation | true |
| At the top level | false |
| Logging | true |
| Applications arrive | com.anylogic.libraries.enterprise.Source.I |
| Time between | exponential(1/130.0) |
| The number of the | 850 |
| Limited number of | false |
| New application | new Inquiry () |
| Action at an exit | entity.time_vxod=time () |

Table 3 – Object of "Queue"

| | |
|---|---|
| The main | |
| Population of agents | false |
| Generic Parameters | [Generic Parameter Substitute: Inquiry] |
| Population of agents | false |
| Generic Parameters | [Generic Parameter Substitute: Inquiry] |
| Movement | |
| Initial Speed Code | (10; MPS) |
| Initial location | |
| To arrange agents | in the location of animation of the agent |
| Capacity | 2000 |
| Maximum capacity | false |
| Action at an entrance | data.add(entity.Ves); |
| To allow leaving on | false |
| To allow | true |
| Application priority | 0, 1, 2, 3; |
| Animation figure | polyline |
| Animation type | com.anylogic.libraries.enterprise.Animato |
| To include collecting | true |

Table 4 – Object of "Delay"

| | |
|---|---|
| The main | |
| Population of agents | false |
| Generic Parameters | [Generic Parameter Substitute: Inquiry] |
| Population of agents | false |
| Generic Parameters | [Generic Parameter Substitute: Inquiry] |
| Movement | |
| Initial Speed Code | (10; MPS) |
| Specific | |
| On the presentation | true |
| At the top level | false |
| Logging | true |
| The delay is set | false |
| Delay time | entity.Ves/10 |
| Capacity | 2000 |
| Maximum capacity | false |
| Animation figure | rectangle |
| Animation type | com.anylogic.libraries.enterprise.Animato |
| To include collecting | true |

Table 5 – Object of "Sink"

| |
|---|
| The main |

| | |
|---|---|
| Population of agents | false |
| Generic Parameters | [Generic Parameter Substitute: Inquiry] |
| Population of agents | false |
| Generic Parameters | [Generic Parameter Substitute: Inquiry] |
| Movement | |
| Initial Speed Code | (10; MPS) |
| Specific | |
| On the presentation | true |
| At the top level | false |
| Logging | true |
| Action at an entrance | time_obrabotki.add (time() - |

2.2 The applied software

For realization of the developed model the environment of modeling AnyLogic 7 Personal Learning Edition 7.3.0 is used.

2.3 Hardware requirements

For normal functioning of model the following requirements to hardware-software part of a workplace of the user are imposed:

1. minimum:

– the Intel or AMD Single Core processor with a frequency not lower than 1 GHz;
– random access memory with a capacity not less than 2 GB;
– the integrated video adapter;
– an empty seat on the system section of the hard drive 550 Mb;
– operating system of Microsoft Windows XP, Linux, Mac OS.

2. recommended:

– the Intel or AMD Dual Core processor with a frequency of 2 GHz;
– random access memory with a capacity of 4 Gb;
– the integrated video adapter;
– an empty seat on the system section of the hard drive 550 Mb;
– Windows 10 operating system.

**3. Special conditions of application**

The model is compatible to any versions an operating system of Microsoft Windows, Linux, Mac OS family.

**4. Conditions of transfer of program documentation or its sale**

The model of rendering of services in an infocommunication network of a special purpose with use of mechanisms of prioritization of a traffic is developed by staff of Military academy of communication.

Transfer of the software product to the third parties, and also educational institutions, institutions of other ministries and departments is carried out on a contractual basis and is solved directly with authors, at their written consent.

Concerning acquisition and sale of the software product to contact the address:

194064, St. Petersburg, Tikhoretsky Avenue of 3, FGCVOOU WAUGH "Military academy of communication of Marshall of the Soviet Union S. M. Budenny" Ministries of Defence of the Russian Federation.

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## ADVERTISING AND TECHNICAL DESCRIPTION "Technique of an Assessment of Efficiency of Application of Technology of Formation and the Admission of Heavy Cargo Trains on Sites and Grounds of the Railroads"

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***UDK*** *56.222.2, 656.222.3, 656.222.6, 656.225, 338.47*
***GRNTI*** *73.29.61, 06.71.09, 73.01.09, 73.29.75*

1**. Functional purpose of a product, area of its application, its restriction**

At the present stage of development of railway transport on numerous cargo intense sites and grounds of the railroads the coefficient of filling of capacity comes nearer or already exceeded admissible value according to the Instruction for calculation of cash capacity.

One of measures for strengthening of capacity of such sites and grounds is application of technology of formation and the admission of heavy cargo trains.

The greatest efficiency of application of this technology can be reached when exporting mass freights from the extracting regions of the Russian Federation, for example, coals from the unique extracting area, – Kuzbass.

Main advantages of application of technology of formation and admission of heavy trains:

1) at inclusion in structure of the cargo train only of "heavy" loaded cars there is opportunity in the conditions of use of the existing length of priyemo-dispatch ways of railway stations to form and pass heavy trains;

2) in this case mass gross of the heavy train increases rather schedule norm of weight of the train, and the power of train locomotives is used more effectively;

3) at the set traffic volumes the settlement number of cargo trains, and, therefore, and the potrebny capacity of sites and grounds of the railroad is reduced;

4) there is opportunity without strengthening of cash capacity to provide the admission of the settlement amount of the movement, the filling coefficient at the same time decreases;

5) owing to decrease in the settlement amount of the movement of cargo trains the operated park of train cargo locomotives and the list contingent of locomotive crews is reduced;

6) lack of need of investment of capital investments into development of infrastructure of railway stations;

7) the time spent of the heavy train for a site due to need of its admission will be reduced it is unceasing;

8) for some purposes of the plan of formation it will be reduced the operational expenses connected with idle time train-hours;

9) the probability of delivery of freight precisely increases in time.

Main shortcomings of application of technology of formation and admission of heavy trains:

1) in certain cases capital investments in acquisition of new park of train locomotives will be required if the used series of locomotives does not provide a possibility of driving of heavy trains;

2) in the conditions of the admission of heavy trains capital investments in system of power supply can be required;

3) the railway track can also demand modernization and reduction to a possibility of the admission of heavy trains;

4) connections with increase in dynamic loading will be required heavy operating costs on the maintenance of a way;

5) at some technical stations application of technology of formation and the admission of heavy cargo trains will cause increase in coefficient of loading of mouths and/or employment of ways.

The technique of an assessment of efficiency of application of technology of formation and the admission of heavy cargo trains on sites and the ground of the railroads assumes calculation:

A) technological efficiency;

B) comparative economic effect.

Technological efficiency is defined depending on:

- capacity of stages taking into account the admission of the fixed trains (passenger, the national teams accelerated, etc.);
- possibilities of technical stations on formation of heavy trains, and also sites according to their admission;
- mass of heavy trains.

At the same time it is offered to conduct calculation of technological efficiency without the tons gross transported in the accelerated and local trains. I.e. the number of these trains is constant and does not change depending on the scenario.

Comparative economic effect is determined as a difference of effects of use of two scenarios of the admission of trains by a site or the ground:

1) Option 1: economic effect of application of technology of formation and admission of all cargo trains of schedule weight and length;

2) Option 2: economic effect of application of technology of formation and admission of heavy cargo trains.

Calculation of effects for everyone of the scenario is conducted only for comparable cost indexes (i.e. identical can not consider):

1) the operational costs connected with the admission of cargo trains on a site or the ground of the railroad;

2) the operational costs connected with formation of heavy cargo trains at technical stations;

3) capital expenditure for acquisition of park of train cargo locomotives, for strengthening of system of power supply and modernization of traveling facilities of a site or ground of the railroads;

4) for some technical stations capital expenditure for reduction of infrastructure to requirements of formation and the admission of heavy trains will be involved.

As the technique assumes in necessary cases to consider capital expenditure, it is also necessary to define a payback period of the project of formation and the admission of heavy cargo trains. In case the existing infrastructure of the railroad allows to carry out the admission of heavy cargo trains, then calculation of small caps expenses and consequently also the payback period is not required.

In a technique interpretations of the economic effect got values and a payback period of the project are given.

Besides it is necessary to consider the following circumstance. At reduction of the settlement amount of the movement for the account of formation and the admission of heavy cargo trains the part of strings of the schedule on which there is a possibility of the admission of an additional poyezdopotok is released.

Then the used formulas for calculation of cost indexes have to be added with the operational costs connected with run of additional trains of various categories, and also the additional income from transportation of goods and/or passengers.

Thus, the technique of an assessment of efficiency of application of technology of formation and the admission of heavy cargo trains on sites and grounds of the railroads allows to establish comparative economic effect, in case of the accounting of investments – a payback period of the project and to draw conclusions on expediency of application of the heavy movement.

**2. The used technical means**

The technical means used during creation of a technique: the Intel Pentium computer, with Windows 7 OS and the software of MS Word, MS Excel, Adobe Reader XI.

**3. Special conditions and requirements of organizational, technical and technological character**

Treats necessary conditions of application of a technique: existence of the computer with Windows OS with the software of MS Word, MS Excel, Adobe Reader XI.

**4. Conditions of transfer of documentation on development or conditions of its sale**

Transfer of a technique of an assessment of efficiency of application of technology of formation and the admission of heavy cargo trains on sites and grounds of the railroads can be carried out on the basis of contracts.

Concerning acquisition of the manual it is necessary to address in FGBOOU WAUGH "The Siberian state transport university".

Address: Russia, 630049, Novosibirsk, Dusya Kovalchuk St., 191.

Ph.: (383) 328-04-93

E-mail: kate-kitton@yandex.ru or volkoffa88@mail.ru

## ADVERTISING AND TECHNICAL DESCRIPTION "Mathematical and Tool Methods and Models in Economy"

*Kemerovo institute (branch) of federal public educational institution of the higher education "Plekhanov Russian Academy of Economics"*

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***UDC** 338.24.01*

***GRNTI** 06.35.51*

1. **Functional purpose of the program, scope, its restrictions**

The product represents the electronic version of the collective monograph "Mathematical and Tool Methods and Models in Economy" which includes the preface, the main part consisting of 9 heads, the list of the used literature and sources.

The monograph prepared by group of authors of the Kemerovo institute (branch) of FGBOU IN "Plekhanov Russian Academy of Economics" is devoted to research of social and economic objects by means of mathematical and tool methods and models.

In the monograph methods of imitating modeling on the example of model of a technological production line are considered, features of decision-making are given in economy, examples of use of a method of the analysis of hierarchies for the solution of tasks in the sphere of regional and world economy are described. The important place is given to studying of use of computer technologies for creation of model of Leontyev of diversified economy, to consideration of nonlinear models of distribution of a stream in power and in economy, to

examples of use of indistinct models for the analysis of bankruptcy of the enterprise, and also to creation of model (2n+1) of-dimensional contact variety in economy in relation to a problem of maximizing profit of firm.

Chapter 1 is devoted to consideration of the main investigation phases of tasks for adoption of optimal solutions on the basis of mathematical modeling. The economic-mathematical model of a multicriteria problem of decision-making in the conditions of definiteness with use of Pareto-optimalnosti is in detail stated. Methods of the solution of a task for determination of weight of the considered alternatives are proved.

In chapter 2 for the solution of tasks in the sphere of regional and world economy the method of the analysis of hierarchies is presented. As a problem of research the choice of the most optimum form of regional economic policy in the conditions of globalization from possible three is outlined: politicians of "the budgetary federalism" (alignment of levels of development of regions), politicians of "the polarized (focused) development" of regions and regional economic policy on the basis of the concept of "a glocalisation of regional development", being guided by criterion of minimization negative and maximizing positive consequences of globalization at the national and regional levels. As a method of research of this problem the method of the analysis of hierarchies which allowed to consider process of functioning of regional economic system in the conditions of globalization from positions of integrity and embedding of regional economy in geoeconomic system is reasonable and used.

In thirds to the head creation of model of the technological line with use of the principles of imitating modeling is considered. The special attention is paid to development of algorithm which allows to model process of functioning of multiphase system and to carry out the choice of optimum structure of the technological line.

In chapter 4 methods of the veyvlet-analysis conducted research of behavior of hour data of an index of MICEX. Veyvlet-decomposition of the studied signal is executed by coefficients of scaling 8 and 5, periodic components of coefficients of decomposition are revealed. For forecasting of behavior of a signal on the basis of the veyvlet-analysis the model differing in high degree of reliability, realness, adequately reflecting current trends of development of the exchange market is offered.

In a chapter 5 the properties of some models of distribution of a stream describing systems for transportation of different types of production and resources between suppliers and consumers are characterized. At the formulation and the analysis of models dual problems of convex optimization and algorithms of internal points which properties were investigated in the second and third chapters are used. The interpretations received with use of dual statements of problems of optimization are of great importance for the analysis of properties of models.

In a chapter 6 the model of interindustry balance – Leontyev's model is considered. On examples the possibility of practical realization of modeling with use of computer technologies is shown.

In a chapter 7 on the example of the Kemerovo region research of dependence of a gross regional product on three groups of factors is conducted: social and economic, investment, and innovative with use of the econometric analysis. The detailed analysis and check on the importance of the received equations of regressions and their coefficients is carried out. The received models allow to estimate the level of economic development of the Kemerovo region and to predict the size of a gross regional product of the Kemerovo region.

In a chapter 8 quite new approach to creation of mathematical model of the investment project in the conditions of incomplete information with use of the theory of indistinct sets is considered. By means of indistinct models the analysis of risk of firm at a conclusion to the market of new production and the analysis of risk of a possibility of bankruptcy of firm is moved.

In a chapter 9 the basic concepts of contact geometry are considered, designs of creation of contact structures, contact metric structures are given, new classes of the associated contact

metric structures are received. The model (2n+1) of-dimensional contact variety in economy on the example of a problem of maximizing profit of firm is constructed.

The main value of the electronic monograph consists that many chapters are written on the basis of research of mathematical and tool methods and models in relation to the solution of practical tasks in economy. In this part it represents systematization of practical experience of consideration of economy in a raznourovnevy context – from positions global, national, regional - methods and instruments of economic-mathematical modeling.

The monograph is calculated on a wide range of experts: scientists, teachers, the practicing economists, students, undergraduates and graduate students of the higher education institutions which are interested in these problems. Certain heads can be used as the manual on disciplines "Mathematical and tool methods and models in economy", "Mathematical methods and models in economy" for the directions of preparation 38.03.01 "Economy" level - a bachelor degree, 38.03.06 "Trade business" level – a bachelor degree, 38.04.01 "Economy" level – a magistracy, 38.06.01 "Economy" level - postgraduate study.

**2. The used technical means**

The electronic version of the monograph has the volume of 5,68 MB, demands not less than 20 MB of free memory of the RAM, works in an operational environment of Windows 95 above. For steady operation of application there are enough opportunities of the personal computer with the processor similar Pentium 2000 above.

**3. Special conditions of application and requirement of organizational, technical and technological character**

The submitted electronic test document contains graphic materials, for creating favorable conditions and reduction of exhaustion of eyes it is recommended to use the monitor – with the diagonal of 17 inches, 80 Hz with a frequency of vertical development with the resolution of 1078x768 and above.

**4. Conditions of transfer of program documentation or its sale**

Distribution and use of the electronic monograph can be carried out with the consent of authors at the address to the address rencem@kirsute.ru

## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic collection of scientific works of the Odinadtsaty International scientific and practical conference "Actual Problems of Trade and Economic Activity and Education in Modern Conditions"

*Orenburg branch of federal public budgetary educational institution of the higher education "Plekhanov Russian Academy of Economics"*

*Abdeshova A.SH., Abdulova T.G., Abramov S.YU., Agafonova YU.N., Akimov I.A., Akimov S.S., Akulov S.V., Anikeeva M.A., Antonov V.V., Barysheva ZH.B., Bobrova V.V., Bochkareva I.A., Varavva M.YU., Voyuckaya I.V., Gabdullina M.A., Gilazieva S.R., Dackovskij V.A., Dzhamalova G.A., Eniderkina S.G., Erzhanova Z.K., Ershova A.V., Zolotova L.V., Kazakov A.A., Karagodin D.A., Karakulina E.O., Kenbejlova G.A., Kiseleva ZH.I.*

*Kolodyazhnaya A.YU., Konakova G.M., Kondina E.A., Konyuchenko O.N., Kosilov V.I., Kostina N.G., Kos'ke M.S., Kuz'mina I.G., Kurakin A.M., Kusainova L.I., Kutubarova G.D.. Lazareva O.S., Lapteva E.V., Lekareva YU.S., Lipatkin A.S., Lygina O.I., Lyndina E.N., Magomedov R.R.., Marinchev M., Maslova E.A., Matveev A.G., Mayakovskaya O.V., Medvedev P.V., Mishuchkova YU.G., Moldagulova ZH.A., Morozova M.V., Nesterova T.G., Ogorodnikova E.P., Pavlidis V.D., Pankova E.V., Pershina A.G., Pilipenko A.V., Pobegajlova M.K., Popov A.A., Portnova L.V., Prikazchikova O.V., Pustotina G.F., Pustotina N.V., Remizova V.F., Ryvaeva A.N., Salihov A.A., Samarskij A.A., Safonov S.I., Safonova O.N., Smorodin V.V., Snatenkov A.A., Sultanova Z.H., Tagieva N.A., Tarshilova L.S., Tripkosh V.A., Trunina O.YU., Tueva N.V., Tyumambaeva A.G., Uteulenova ZH.S., Fedorova O.I., Fedotov V.A., Hanova E.F., Cypina YU.S., CHernikova O.N., SHlyapnikova V.V., SHumilina N.S., YUmatov A.S., YArullin R.R., Kosov S., Uvarov A.*

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1. **Functional purpose of a product, scope, its restrictions**

The electronic collection of scientific works of the Odinadtsaty International scientific and practical conference "Actual Problems of Trade and Economic Activity and Education in Modern Conditions", contains materials of the conference of the same name held by the Orenburg branch of FGBOU VPO "REU of G.V. Plekhanov" on April 22, 2016.

At conference actual problems of trade and economic activity in Russia and abroad were covered. The collection is designed for scientific and practical workers, teachers of higher educational institutions, graduate students, masters, students and bachelors.

The collection included the following works, with classification by the scientific directions (conference sections):

Section 1 Consumer market: state, tendencies and prospects of development

O. S. Lazareva. Planning and forecasting: experience of the past and present

A. Uvarov. Problems of economy of Russia: reasons, analysis, prospects

M. Yu. Barabbas, O. I. Fedorova. Formation of fundamentals of the Russian innovative economy as alternative of raw model of development

S.Yu. Abramov. An index of development of the person and economic activity in regions

O. I. Lygina Regional food security (on the example of the Aktyubinsk region, the Republic of Kazakhstan)

L.S. Tarshilova Operating conditions of agrarian production of the West Kazakhstan region

A.Sh. Abdeshova. A role of Kazakhstan in integration process of economy

N. V. Pustotina, G.F. Pustotin. Features of legal regulation of activity of the commercial organizations

O. V. Prikazchikova. The mechanism of legal regulation of consumer protection when working and rendering services

A.V. Pilipenko. Some problems of development business - planning as parts of intra company planning in the conditions of the current economic crisis in Russia

O. V. Prikazchikova. Realization of the rights of consumers for receiving necessary and reliable information about the main consumer properties of goods, works or services

N. V. Tuyeva Modern approaches to formation of the trade range

N. V. Tuyeva. Manifestation of emotional intelligence of sellers on sales

Yu.S. Lekareva. Specific features of approach to advertizing in the different countries

P. V. Medvedev, V. V. Bobrova, V.A. Fedotov, I.A. Bochkaryova Market researches in the market of pasta in Orenburg

P. V. Medvedev, Zh.S. Uteulenova. Market research of the market of bread and bakery products of the Orenburg region

P. V. Medvedev, A.G. Pershina. Development of a new grade of bread on the basis of results of market research of consumers

S. V. Akulov. Information support of safety of foodstuff in the regional market

D. A. Karagodin., S.G. Eniderkina. The economic analysis of food security in system of self-sufficiency of the country production of agrarian and industrial complex

**Section 2. Accounting, economic analysis and audit: current state and prospects of development**

M. S. Koske, I.V. Voyutskaya. Problems of estimation of cost of auditor services

M. S. Koske, E.A. Maslov. Problems of the accounting of materials in construction

I.V. Voyutskaya, Yu.G. Mishuchkova. Rights, duties and responsibility of participants of auditor process

Yu.S. Tsypina. Technique analysis of financial stability of the enterprise

Yu.N. Agafonova. The analysis of the main indicators of system of consumer cooperation across the Orenburg region

G. A. Kenbeylova, G. A. Dzhamalov, G.M.Konakov. A current state of the account and control of stocks in the agricultural organizations

Zh.B. Barysheva, Z.K.Erzhanova. The main stages of management of credit risks at the present stage of development of the credit market of Kazakhstan

**Section 3. State and prospects of development of a financial banking system of the Russian Federation and CIS countries**

L.V. Zolotova, L.V. Portnov. Financial behavior of the population in medium-term prospect: application options in the financial market of Russia

E.V. Lapteva, O. N. Konyuchenko. A general characteristic of a condition of the market of mortgage lending according to Agency for housing mortgage lending

I.G. Kuzmina. Concept business of processes and their role in reproduction process

M. A. Gabdullina. A state and problems of banks of the second level of the Republic of Kazakhstan on quality management of a loan portfolio

A.A. Snatenkov. Rating assessment of investment appeal of the largest public companies of the oil and gas Russian Federation complex

A.Yu. Kolodyazhnaya. Debt load of regions of the Volga Federal District: dynamics and structure

E.P. Ogorodnikova. Investment potential of the Orenburg region and the factors influencing it

O. Yu. Trunina. Assessment of investment climate of the Orenburg region

R. R. Yarullin. A current state of insurance policy in the Russian Federation

G. D. Kutubarova. Regional financial supermarket as perspective form of development of regional banks

Z.H. Sultanova, T.G. Abdulova. Review of approaches to an assessment of financial stability of the enterprise

L.I. Kusainova. A state and prospects development of stock market in Kazakhstan

A.A. Samarsky. An assessment of dynamics of volumes of mortgage lending in Russia

A.G. Tyumambayeva. Problems of bank crediting of legal entities in Kazakhstan and a way of their decision

S. S. Akimov. Optimization of use of the indicator of moving averages of exchange rate by means of the regression equation

M. A. Gabdullina. A state and problems of banks of the second level of the Republic of Kazakhstan on quality management of a loan portfolio on the example of JSC DB Alfa-Bank

A.Sh. Abdeshova. The main aspects of formation of an optimum loan portfolio of commercial bank (on the example of DB of JSC Sberbank)

O. V. Mayakovskaya, A.N. Ryvayeva. Tendencies and prospects of development of the insurance market in the conditions of sanctions

M. A. Anikeeva. Statistical analysis of indicators of structure and structure of labor potential of economy of Russia

V. V. Antonov. Automatic automobile gas stations – optimum and perspective investments into the crisis period

V.A. Datskovsky. Essence of foreign investments: concept, definition, distinctive features

O. N. Konyuchenko. Productivity of activity of Deposit Insurance Agency

E.A. Kondina. Theoretical approaches to definition of the economic nature of households and their finance

S. Kosov. Analysis of structure and dynamics of the volumes of investment into construction of the Orenburg region

A.M. Kurakin. Methods and research problems of a manpower

A.S. Lipatkin. Dynamics, volume and structure of investments into fixed assets of Russia

M. Marinchev. Economic contents and concept of the investment project

M. V. Morozova. Essence and value of information and communication technologies

E.V.Pankova. Features of formation and use of savings of the population of the Russian Federation

M. K. Pobegaylova. The structural and dynamic analysis of migration flows in Russia

N. A. Tagiyeva. Review and systematization of approaches to treatment of concept and purposes of financial planning in the Russian educational literature

**Section 4. Increase of effective management of modern business**

A.A. Popov. Administrative effects and their interrelation with management efficiency

Zh.A. Moldagulova. Management of innovations and innovative processes

A.A. Popov. Assessment of efficiency of strategy of advance of goods

E.N. Lyndina, O. N. Chernikov. To a question of compensation of personnel of the enterprises in the conditions of crisis and post-crisis

O. N. Chernikova, A.A. Kazakov. Social responsibility of the enterprise as its competitive advantage

A.S. Yumatov. Actual problems of management of council of an apartment house

A.A. Popov. Education reform: problems and prospects

A.A. Salikhov, V. I. Kosilov. Problems of production management of environmentally friendly vegetable raw materials and food in the conditions of an agroecosphere intensification

**Section 5. Social, humanitarian and natural-science paradigm of economic activity**

V. A. Tripkosh. The version of compound Bayesian algorithm of recognition of situations in management information systems of the enterprises and the organizations

I.A. Akimov, E.O. Karakulina. Development and research of mathematical model in production of composite materials in installations of automatic conducting technological process

A.G. Matveev. About training of the students who are trained on economic specialties in the field of information security

O. N. Safonova, S. I. Safonov. A case method as the instrument of development of communicative abilities of professional interaction of future economists in a foreign language

V. D. Pavlidis. System of secondary commercial education in Russia at the end of XIX-the beginning of the 20th centuries.

R. R. Magomedov. Designing of image of V. V. Putin during presidency in 2000 - 2008.

T.G. Nesterova. A conceptual component of a concept "Wealth" in the Russian and English pictures of the world

N. S. Shumilina, S.R. Gilaziyev, V. V. Smorodin. To a question of formation of a professional and ethical orientation in sports activity

Zh.I. Kiselyova of V. V. Shlyapnikov. Features of active recreation, as the factor increasing working capacity

N. G. Kostin. Communicative competence: possibilities of definition

V. F. Remizova. Problems of functional stylistics

E.F. Hanova. Innovative aspects of activity of the teacher

A.V. Yershova. Music education in the conditions of market economy: advantages and restrictions

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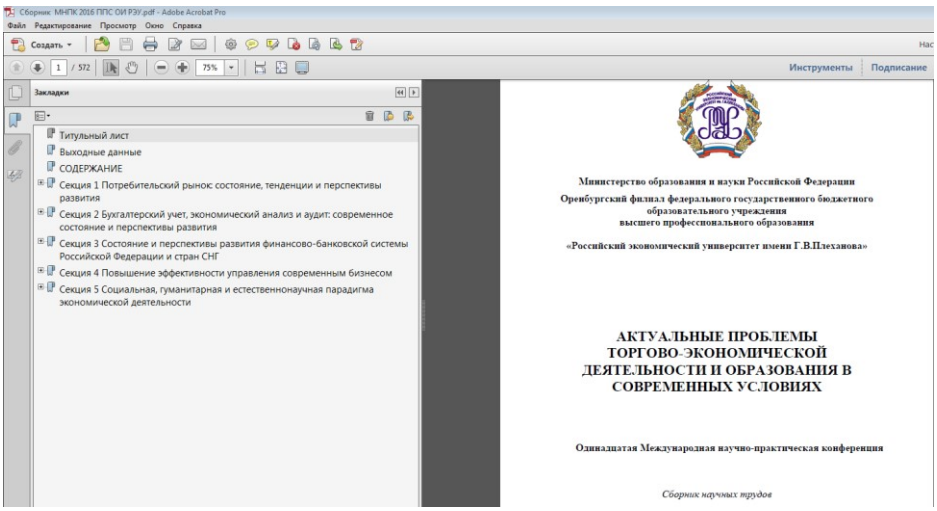


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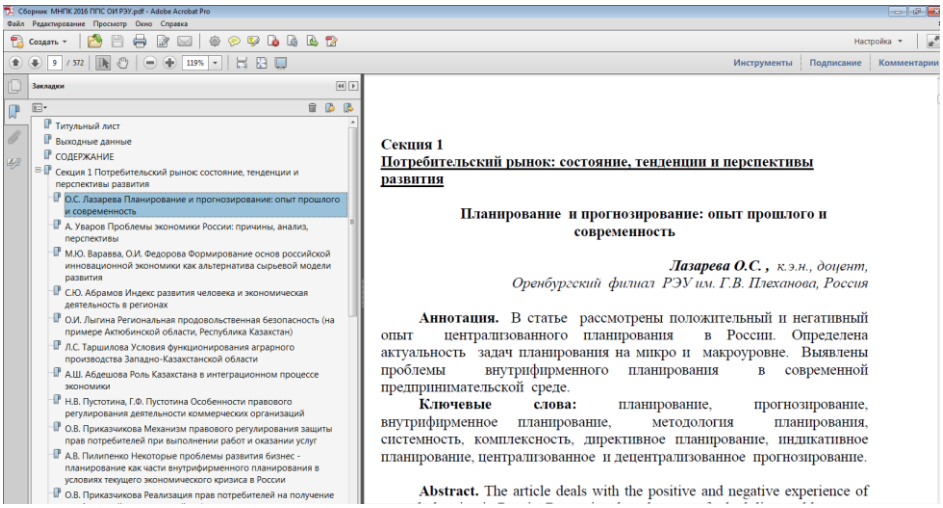


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## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic collection of scientific works of the VIII International student's scientific and practical conference "Actual Problems of Trade and Economic Activity in Modern Conditions"

*Orenburg branch of federal public budgetary educational institution of the higher education "Plekhanov Russian Academy of Economics"*

*Akkubekova EH.I., Balovneva M.S., Bannikova E.A., Bederov A.T., Belyaeva A.V., Bondarenko E.I., Burova M.V., Valiev R.F., Valyshev S.S., Varlamov E.A., Vergunova A.V., Vereshchagina E.V., Voyakina D.A., Garnova N.M., Gorbatova E.O., Gorbunova A.A., Gorbunova M.A., Gorynina I.A., Grigor'eva A.S., Daminova K.R., Dan'kova M.A., Demidenko E. A., Derevyankin K.A., Domanina E. V., Donina N.S., Dyneva A., Evgrafova L.D., Evdokimova A.A., Evdokimova M.A., Elistratova D.A., Emel'kina A.A., Erohina A.S., Ziyafutdinova V.M., Znamenskaya V.V., Ignat'eva N.A., Ilesova D., Kazaeva S.A., Kazakova D.V., Kazaryan D.G., Karasyova V.V., Kitova O.S., Klemeshova E.I., Klimkina I.V., Knyazeva I.S., Kobahidze K.D., Kolovertnova A.I., Kondrova A.SH., Koroleva V.A., Koroleva E.A., Kubasova K.A., Kuzhman A. V., Kujshibaeva A.K., Kulemina T.V., Kutepov M.V., Kusherbaeva L.M., Lihachyova A. A., Mazhirina O.A., Makarova N.N.. Malina YU.A., Manaeva A.K., Manohova A.A., Mantrova A. A., Masal'skaya M.A., Masharova E.A., Merkulova M.S., Mokronosova A.D., Morozkina V.V., Murzalina A. B., Nabizade M. K., Neprokina YU.N., Nesterova M.V., Nefedov A.V., Novichenko N. M., Odnoromanenko A.G., Orekhova A.YU., Orlova M.V., Papikyan EH.R., Pivovarov R. A., Polenova A. N., Polyanskih A. A., Pomeranceva E.I., Ponomareva I.A., Ponomareva I.I., Pospelova A.V., Prokudina E.V., Radchenko A.V., Ramazanova A.K.B., Rogozhina O.A., Romashchenko O.S., Romashchenko YU.S., Ryshchanova A.S., Sarvarova V.F., Skoryh E.S., Smolyar V.S., Solyarik S.V., Stepanova E.A., Sundetova A.R., Tatarinova T. V., Tleuva A.V., Tokarev E. N., Tokmakova E.I., Tret'yakova A.N., Tukanova D.U., Ustinov A.A., Utesheva G.M., Ushakova ZH.O., Fedosova V.V., Fil'china N.S., Fomina A.M., CHerdincev V.B., CHuvashov D.YU., CHurakova A.A., SHagidullina R.I., SHaraflislamova M.R., SHevchenko A.S., SHermecinskij A.S., SHlyahtina A.V., SHumejko A. I., SHumejko N.A., EHl'kina A.B.*

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**1. Functional purpose of a product, scope, its restrictions**

The electronic collection of scientific works of the Eighth International student's scientific and practical conference "Actual Problems of Trade and Economic Activity in Modern Conditions", contains materials of the conference of the same name held by the Orenburg branch of FGBOU VPO "REU of G.V. Plekhanov" in April, 2016.

At conference actual problems of trade and economic activity in Russia and abroad in modern conditions were covered. The collection is designed for scientific and practical workers, teachers of higher educational institutions, graduate students, masters, students and bachelors.

The collection included the following works, with classification by the scientific directions (conference sections):

**Section 1. Analysis and regulation of activity of subjects of the consumer market**

D. A. Voyakina. International sanctions and response sanctions of the Russian Federation: scales of their influence and economic consequences

N. M. Novichenko. The analysis and forecasting of retail trade turnover in the Orenburg region

E.A. Stepanova. The analysis of foreign trade of the Orenburg region for the first half of the year 2015

E. N. Tokarev. Modern problems of remote trade in Russia

M. S. Merkulova. Analysis of dynamics of a standard of living of the population of the Orenburg region

E. A. Demidenko. Classification of the main signs of modern creative economy

A. A. Polyansky. Concept and essence of corporate activity

A. A. Mantrova. Prestige of the enterprise: value and the defining factors

E. V. Domanina. The review of social privileges and privileges of large employers on the example of Orenburg

V. F. Sarvarova. Brand cost: review of major factors of formation and methods of its assessment

M. A. Gorbunova. State and features of labor market of the Orenburg region

A.V. Belyaeva. Social guarantees and analysis of dynamics of unemployment rate

N. M. Novichenko, N. S. Filchin. Economical and legal aspects of regulation of the labor relations in the Russian Federation

R. F. Valiyev. Legal regulation of the transport relations in the Russian Federation at the present stage

A.A. Polyansky. Transport system of the Orenburg region: analysis and tendencies of development

M. A. Masalskaya. Development of agriculture of the Orenburg region as source of growth of economy of Russia

M. R. Sharaflislamova. Tendencies of development of fuel industry of the Orenburg region

V. M. Ziyafutdinova. A role of a metallurgical complex in strengthening of economy of the Orenburg region

N. S. Filchina. A state and prospects of development of oil and gas sector in the Orenburg region

A. A. Churakova. Influence of the oil market on internal economy of Russia

A. A. Likhachyova. The analysis of need of the population of the Orenburg region for treatment in health resorts

A. Evdokimova, A. Dynev, T. Kulemin. Legal regulation of rendering hairdresser's services to the population

I.V. Klimkina, A.Yu. Orekhov. State regulation of tourist activity in the Russian Federation, a tendency and prospects of development

M. K. Nabizade. Stages of evolution of estimated activity in pre-revolutionary Russia

A.V. Pospelova. Development of tax system of Russia: its shortcomings and ways of their decision

E.V. Domanina. The choice of the optimum mode of the taxation for the individual entrepreneur who is engaged in retail trade

M. V. Orlova. Organization of estimated activity abroad

A. I. Shumeyko. The forecast of mortgage insurance (on the example of the Orenburg region)

A. B. Murzalina. Problems of reforming of pension system in Russia

A.V. Radchenko, A.A. Gorbunov. Complex of indicators of quality of trade service: assessment and analysis

A.S. Yerokhina. An assessment of indicators of reflexive readiness of workers of a contact zone in the Orenburg shops of type of "Sporttovara"

A.T. Bederov. Structure of management of oil of the market

D. Ilesova. Competitiveness increase as component of system of influence on formation and growth of economy of the Republic of Kazakhstan

T. V. Kulemina. Application of algorithm of an assessment of reflexive readiness on the example of trade personnel of shoe shops of Orenburg

A. V. Kuzhman. Formation of creative human potential

I.V. Klimkina. An assessment of reflexive readiness of trade workers in the Orenburg shops like "Jeweler goods"

A.V. Radchenko, A.A. Gorbunov. Ways of improvement of interactive marketing communications of organizers of exhibitions and fairs on the example of LLC Uralekspo

E.I. Klemeshova E.I., O. S. Kitova. Loyalty tools in market conditions

V. B. Cherdintsev. A complex of merchandayzingovy actions in LLC Home Lend shop"

Yu.N. Neprokina. Marketing activity of manufacturing enterprise JSC Plant of Drilling Equipment in crisis conditions

V.A. Koroleva, E.A. Koroleva. Features of commercial work of a drugstore of LLC Zdorovye lyudi Orenburg in the pharmaceutical market of the city

I.A. Ponomareva. An image of the woman in advertizing

A.Yu. Orekhova. Fear of a clean sheet or how to create new ideas

E.I. Akkubekova. New tendencies of development of the modern economic theory

A.V. Shlyakhtina, E.R. Papikyan. Assessment of a level of quality of the DEXP Ursus A370i tablet

E.A.Stepanova. Economical and legal aspects of advertizing activity

V. B. Cherdintsev. A security system of a modern mall (on the example of shopping and recreation center "North")

V. S. Smolyar. Topical issues of consumer protection of goods for rest and tourism (on the example of a network of the weapon centers "Arsenal" in Orenburg)

L.M. Kusherbayeva. To a question of legal regulation of subsurface use in the conditions of market economy

D. V. Kazakova. Legal questions of violations of intellectual property rights

E.A. Varlamov. Questions of the right regulation of housing construction in the Orenburg region

M. V. Burova. Economic, legal and environmental issues and prospects of development of oil and gas accumulation of belts

S. A. Kazayeva. Questions of legal regulation of production of hydrocarbonic raw materials on water areas in the conditions of economic sanctions

A.R. Sundetova. Features of development of strategic planning at the enterprise

Zh.O. Ushakova. Social bases of economic development of rural territories

A. B. Elkina. About position of unworthy successors in civil law

A.S. Ryshchanova, R. I. Shagidullin. A solution of the problem of social discrimination of persons with limited opportunities of health

**Section 2. The account, the analysis and audit in the conditions of globalization**

G. M. Utesheva. A state and prospects of development of agricultural cooperation in the Republic of Kazakhstan

N. M. Garnova. To a question of an assessment of reliability of indicators of liquidity

A.A. Gorbunova, A.K. Manayev. Internal control of arrears of buyers and customers and its reflection in balance

M. A. Dankova. Professional judgment of the accountant in provisions of International Financial Reporting Standards

A.I. Kolovertnova. Conducting accounting of fixed assets: practical problems

K.A. Kubasova, A.S. Shevchenko. Information technologies in the administrative analysis

O. A. Rogozhina. Cost criterion of acceptance of fixed assets to the account in accounting and tax accounting

N. S. Donina. The accounting of a tax on the income on natural persons under civil contracts

A.A. Emelkina. The choice of a method in the analysis of material and production stocks

A.B. Murzalina. Bases of the account and formation of information on fixed assets in financial statements: international and Russian practice

A.N. Tretyakova. Professional judgment of the accountant when forming accounting policies

D. A. Voyakina. Reliability of accounting (financial) reports in the Russian Federation

**Section 3. The theory and practice of finance and banking at the present stage**

E.I. Akkubekova. Analysis of efficiency and realization of crediting of regional banks of Orenburg

S. S. Valyshev. A rating assessment of solvency of the trade organization borrower (on the example of LLC O'key)

S. S. Valyshev, R. A. Pivovarov. Factorial analysis of size of turnover of small enterprises of the Orenburg region

A.V. Vergunova. Statistical analysis of assets of the banking sector of the Russian Federation

E.V. Vereshchagina. The analysis of a gross revenue of trade organization (on the example of LLC Shar)

M. A. Gorbunova. The concept of behavioural finance and its application in a business assessment

I.A. Gorynina. The factorial analysis of commodity turnover on the example of JSC M.video Company

D. A. Elistratova. Problems of cash performance of the federal budget of Russia

V. V. Znamenskaya. The analysis of bankruptcy (insolvency) of trade organization (on the example of LLC Shar)

V. V. Karasyova. Financial logistics of trade organizations (on the example of CJSC Restayl)

A.Sh. Kondrova. Factorial analysis of distribution costs of LLC Megapolis Orenburg

A.K. Kuyshibayeva. Expenses of trade organization: concept, classification. (on the example of JSC M.video Company)

N. N. Makarova. Factorial analysis of profit of trade organization LLC Lenta

M. K. Nabizade. Statistical analysis of structure of the income and expenses of the federal budget of the Russian Federation

M. V. Nesterova. The analysis of influence of separate factors on the size of commodity stocks and determination of their necessary size on the example of JSC Toy Store

A.G. Odnoromanenko. The analysis of interrelation of cash and material flows in CJSC Restayl

A.G. Odnoromanenko, V. V. Karasyov. State support of small and medium business as basis of development of the competitive relations

A. A. Polyansky. Financial and budgetary control as basis of effective use of budgetary funds

A.K.B. of Ramazanov. Analysis and planning of distribution costs of JSC Bashspirt

E.A. Stepanova. Analysis of narrowness of communication of indexes of MICEX and RTS with foreign analogs and prices of oil

V. V. Fedosova. Finance of households of the Russian Federation: state, problems, prospects

M. R. Sharaflislamova. Public debt of Russia: state, problems, prospects

K.R. Daminova. Pension fund of the Russian Federation: sources of formation and direction of use

E.I. Pomerantseva. Reserve fund and National welfare fund as element of successful functioning of economy of the Russian Federation

E.S. Ambulances. A credit role in the solution of housing problem in Russia

E.V. Vereshchagina. The analysis of dynamics and forecasting of volume of a land tax in Russia

I.A. Gorynina, N. N. Makarov. Problems of financing of small and medium business

Yu.A. Malina, M. A. Evdokimov. Dynamics of development of small and average business in the Orenburg region

D. G. Kazaryan, A.Sh. Kondrova. Structure of small enterprises of the Orenburg region by types of economic activity in economy

**Section 4. Improvement of management of the organizations**

A. N. Polenova. How to provide effective participation of the seller in the course of sale of goods

T. V. Tatarinova. Management of the entering information streams of the organization for competitiveness increase

M. V. Kutepov. Stimulation of sales as an important component in activity of LLC Agrotorg

N. A. Ignatyeva. Research of social and psychological climate in collective on the example of the cleaning company LLC KORDE SERVIS (Orenburg)

T.V. Tatarinova. Development of corporate strategy of the company by comparison of results of segmentation of clients and requirements of development of the market

M. V. Kutepov. Modern methods of work incentives of personnel

O. A. Mazhirina. To a question of prospects of management of objects of Internet trade of Russia in modern conditions

A.A. Ustinov. Innovative policy of the organization

T.V. Tatarinova Analiz and the forecast of a condition of a luxury commodity market in modern Russia. An image of brands and behavior of consumers during the crisis period

A.A. Gorbunova, A.K. Manayev. Theoretical aspects of management of the integrated marketing communications

E.I. Tokmakova. Management of deliveries of goods in retail distribution networks (on the example of LLC O'Key)

V. V. Morozkina. Woman head: effective management of the organization

Section 5. Social, humanitarian and natural-science bases of economic activity

T.V. Kulemina. Researches of development of the market of electronic commerce (b2c) in Russia

E.A. Masharova. Analysis of structure of electronic catalogs of the B2B model

K.D. Kobakhidze. Capital or province? Development of the B2C segment and its availability to inhabitants on the example of online store of flowers

A.A. Evdokimova. Comparative analysis of online stores of sports goods

E.I. Akkubekova. Adoption of collective decisions – paradoxes and coherence

M. K. Nabizade, M. V. Orlov. The statistical analysis of cost of a grocery consumer basket in Orenburg

K.A. Derevyankin. Relevance of application of intellectual technologies in an automatic filtration of spam

D. U. Tukanova. Social engineering as threat of information security

A.M. Fomina. P2P file exchange networks as a way of data exchange on the Internet

A.V. Nefedov. Relevance of application of an electronic elevator in automation of management of autonomous heating of a complex of buildings

A.A. Manokhova. Information compression in announcements of work

A.V. Tleuva. Corporate ethics and its tools in updating of business relations (foreign experience)

E.O. Gorbatova. Problems of ethics of business relations: image of firm as instrument of involvement of potential clients

A.V. Vergunova, S. V. Solyarik. System of ethical and ethical standards in structure of professional administrative behavior

M. V. Orlova. Business etiquette and the organization of an operational information exchange in the organization

A.V. Vergunova, S. V. Solyarik. Ethics in economy: applied and professional character

A.D. Mokronosova. PR technologies in formation of image of the Liberal Democratic Party of Russia (LDPR) in the Orenburg region

A.V. Vergunova. Relation of students to marriage

M. K. Nabizade. Features of virtual etiquette in practice of electronic business correspondence

E.A. Demidenko. Stylistic means of expression of concepts "Wealth", "Poverty" in O. Wilde's fairy tale

I.S. Knyazeva, N. A. Shumeyko. Phraseology as element of the Russian national business culture.

M. V. Orlova, R. F. Valiyev. Formulas of speech etiquette: experience of interlingual comparison

D.Yu. Chuvashov. Francophonie phenomenon: French role in global economic space

A.V. Tleuva. business concept: definitsionny aspect

E.I. Bondarenko, M. V. Orlov. Healthy lifestyle of students of Orenburg

A.S. Grigorieva, A.A. Manokhov. Formation of a balanced diet trained, playing physical culture and sport

O. S. Romashchenko, Yu.S. Romashchenko. A role of physical culture in training of students businessmen for professional activity

A.S. Shermetsinsky. Influence of physical culture on psychophysical qualities of trained

M. S. Balovneva. The organization of occupations a step aerobics of the trained HIGHER EDUCATION INSTITUTIONS

E.A. Bannikova, N. A. Ignatyev. A healthy lifestyle in the Russian Federation

L.D. Evgrafova. Moral education trained in the GTO system

I.I. Ponomareva. Physical training of student's youth

E.V. Prokudina. Fitness in life of the modern person

During creation of the collection the concept of the e-book is realized. When loading the file the title screen of the book becomes available to the user

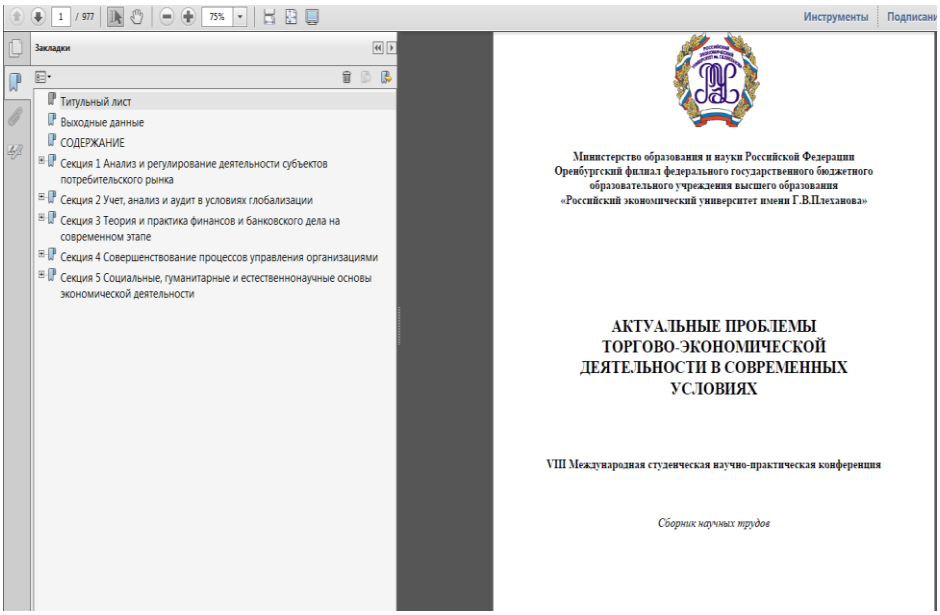



Fig. 1. Title screen of the collection

The interactive table of contents by means of which the user can move without effort under articles of the collection is on the left side located.

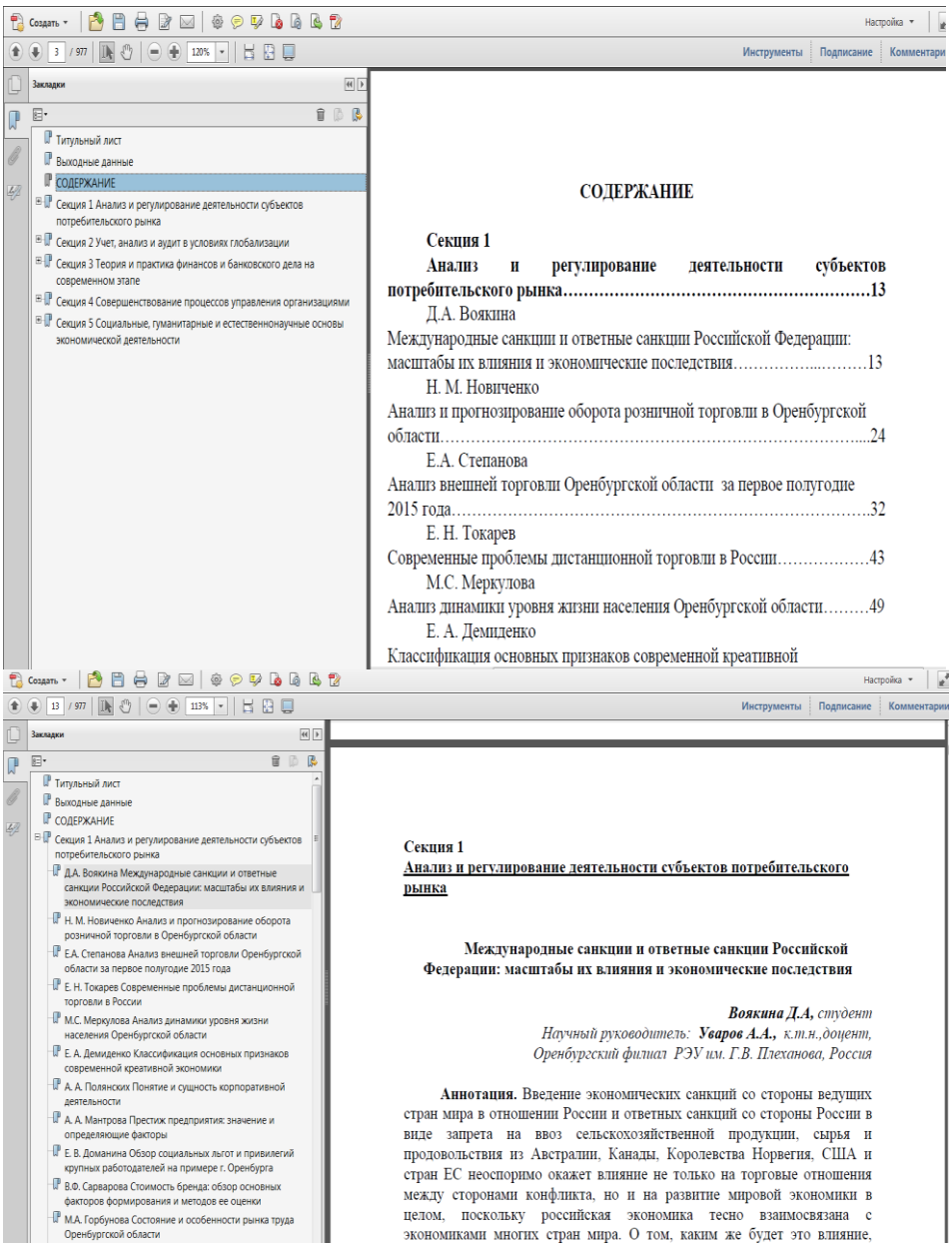



Fig. 2. Windows with an interactive table of contents of the collection

By pressing by the cursor on the name of publication/section on the left side, the user easily moves by the beginning of the chosen publication.

**2. The used technical means**

The software product is developed by means of the compiler PDF-Creater. A target platform of development is the Win32 platform, respectively, the used technical means have to be compatible to this platform.

**3. Special conditions and requirements of organizational, technical and technological character**

*Requirements to the equipment:*

1. Pentium processor or above. The processor has to be compatible to a set of instructions X86 (IA-32).

1. The place on a disk – 13 MB.

2. Random access memory – from 512 MB.

3. An operating system – the Windows XP or above.

4. VGA display or above.

5. Existence of the keyboard, mouse manipulator.

Correct work of the collection is checked in the Windows HR, Windows 7, Windows 8, Windows 10 operating systems.

It is necessary the preset PDF files browser.

**4. Conditions of transfer of program production or its sale**

Condition of transfer of this software product is the contract of purchase and sale signed between a group of authors, the organization developer and interested party.

## ADVERTISING AND TECHNICAL DESCRIPTION "Monograph "Mathematical Modelling of Phase Transformations"

*Sterlitamak branch of Federal public budgetary educational institution of the higher education "Bashkir state university"*

*Kaliev I.A., Sabitova G.S.*

***UDC** 517.9:532.2*

***GRNTI** 27.01.05, 27.31.15, 30.03.15, 30.17.23, 30.51.31*

**1. Summary**

This advertizing technical specification is intended for support of the monograph "Mathematical Modelling of Phase Transformations". The main objective of the monograph is covering of basic concepts of area of modeling of the phase transformations and the most significant results received by authors.

The monograph aims to help undergraduates, to graduate students of a physical and mathematical profile successfully to master fundamental knowledge of the differential equations and mechanics of continuous environments, to deepen the gained knowledge for the solution further of serious scientific and professional problems.

Scientific novelty of the monograph consists that it is devoted to studying of the problems describing phase transformations between liquid and firm phases in the presence of the movement in a liquid phase taking into account such properties of liquid as viscosity, compressibility and heat conductivity. Formulations of new mathematical models for the description of phase transitions are provided in multidimensional elastic media with use of not convex function of free energy.

Interest in studying of such phenomena as phase transformations, is based on numerous technological appendices.

The monograph is stated by laconic language of science which is necessary for formation of fundamental mathematical outlook.

The monograph is designed for graduate students, experts in the field of the differential equations and mechanics of continuous environments, and also undergraduates of the directions of preparation "010000 PHYSICAL AND MATHEMATICAL sciences", "011000 Mechanics. Applied mathematics", profile of "Mathematician and mechanic".

**2. Functional purpose of a product, scope, its restrictions**

Introduction, three chapters and the list of references are presented in the monograph. The historical review of the key mathematical works connected with phase transformations and a perspective of the considered circle of tasks is provided in introduction.

This work is continuation of research of the problems which were considered earlier in the monograph of authors [1].

In chapter 1 the new mathematical model describing phase transformations between liquid and firm phases within full system of the equations of Navier-Stokes for a liquid phase taking into account such properties of liquid as viscosity, compressibility and heat conductivity is formulated and investigated. Rather firm phase it is supposed: (i) the firm phase is not mobile, i.e. speeds of particles of a firm phase are equal to zero; (ii) density of a firm phase does not depend on time, and is function only from spatial variables; (iii) the defining factor is heat conductivity.

The accepted assumptions allow to formulate the mathematical model describing process of phase transition between the viscous compressed liquid (gas) and a solid body including all conservation laws on limit of the section of phases.

The classical task of Stefan is a special case of the considered task when liquid is at rest, and density of liquid, firm phases are constant and equal.

In 1889 the Austrian physicist Josef Stefan offered model for the description of thawing of polar ices. In a series of works he considered several aspects of one-dimensional single-phase and two-phase tasks. These early works and important features put in its model formed the basis in order that the task was called by his name subsequently.

In the offered model Stefan's task and Navier-Stokes's equations the squeezed environment knitting closely intertwine. For the corresponding one-dimensional initial and regional task theorems of existence and uniqueness of the smooth decision "in small" on time are proved. At additional assumptions global theorems of existence and uniqueness for a single-phase task when temperature in a firm phase identically coincides with temperature of phase transition are proved. Some exact solutions of system of the equations of viscous gas are found.

In chapter 2 various mathematical models for the description of phase transitions in multidimensional elastic media with use of not convex function of free energy are offered. As the parameter of the order which is responsible for distinction between phases substance density is chosen. For the linearized task global theorems of existence and uniqueness are proved. These models can be attracted to the description of such physical phenomena as phase transitions in solid bodies (for example, graphite – diamond) or to the description of materials with "memory" of a form. In case of one spatial variable these models are generalization of the known model of Falk.

It is considered that phase transition takes place if some sizes characterizing macroscopic properties of substance change jump of rather external variables. As one of parameters for the description of a condition of substance energy function is used. It can be internal energy, free energy of Helmholtz or free energy of Gibbs which are connected by Legendre's transformation.

In a chapter 3 we are interested not in usual phase transitions of stefanovsky type when energy of substance changes jump, and such at which function of energy changes continuously. Its derivatives can be torn. If the first derivatives suffer jump, then these are phase transitions of the first sort. For phase transitions of the second sort only the second derivatives can suffer a gap. Usually assume that internal energy and free energy of Helmholtz are not convex functions in some range of the arguments. It is possible to describe phase transitions by means of the specific parameter characterizing distinction between phases, the so-called parameter of an order in more detail.

Various models for the description of phase transformations are investigated in works [1]–[4].

**3. Special conditions and requirements of organizational, technical and technological character**

Operating system – Windows HR Professional 2000 above, the Adobe Reader program.

**4. The used technical means**

The monograph is executed in a MiKTeX package and can be visualized in the WinEdt editor. Delivery of a product in the form of the file converted in PDF format is possible.

**5. Work with the monograph**

The presented monograph is addition to classical textbooks for the differential equations and mechanics of continuous environments and promotes more rational approach to studying of theoretical material.

The theory of phase transitions – one of important areas of mechanics of continuous environments which knowledge of basic provisions is necessary for the solution of complex and actual problems. Studying of this theory has to promote formation of modern scientific thinking at undergraduates and graduate students.

The monograph will help undergraduates, graduate students, and also future experts to master in the field sciences terminology and the basic concepts of the theory of phase transformations, to study basic laws and postulates. Undergraduates have to be able to apply basic formulas and statements at the solution of various scientific problems of close subject; to carry out search of various solutions of tasks; to learn to use theoretical material in practice, to be able to read and understand, analyze and systematize the stated material.

**6. Conditions of transfer of documentation or its sale**

Concerning acquisition of the monograph to address authors by e-mail kalievia@mail.ru or sabitovags@mail.ru, and also to the address: 453103, Republic of BashkoAdvertising and technical descriptionstan, Sterlitamak, Lenin Avenue, 49, Sterlitamak branch of FGBOU VPO "Bashkir state university", department of the mathematical analysis to Kaliyev I.A. or department of applied informatics and Sabitova G. S. programming.

**7. List of references**

Kaliyev I.A., Sabitova G. S. Mathematical problems of the theory of phase transitions. Monograph//Chronicles of the joint fund of the electronic Hayka resources and obrazovaniye.2015. No. 9 (52). C.7=l2.

Kaliyev I.A., Sabitova G. S. Averaging of process of phase transitions in multidimensional non-uniform periodic environments//Dokl. FROM VSh AN. – 2000. – No. 1. – C. 18-25.

Kaliyev I.A., Sabitova G. S. New method of the proof of the theorem of uniqueness of a classical task of Stefan//sb. nauch. works / MO. Novosibirsk military of in-t. – 2000. – Issue 9. – Page 39-50.

Kaliyev I.A., Sabitova G. S. Averaging of process of phase transitions in multidimensional non-uniform periodic environments//PMTF. – 2001. – T. 42. – No. 1. – C. 102-107.

## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic scientific resource "Computer Modelling of Process of Nonequilibrium Sorption"

*Sterlitamak branch of Federal public budgetary educational institution of the higher education "Bashkir state university"*

*Kaliev I.A., Sabitova G.S.*

***UDC** 517.962.1:532.2*

***GRNTI** 27.31.15, 27.41.17, 30.03.15, 30.17.23, 30.51.31*

**1. Summary**

This advertizing technical specification is intended for maintenance of the electronic scientific resource "Computer Modelling of Process of Nonequilibrium Sorption". The main objective of a resource is illumination of some problems in the field of modeling of problems of a filtration and representation of the results received by authors.

The filtration of solutions in rocks is followed by difficult processes of their physical and chemical interaction of which absorption of components of solution a firm phase (sorption) or, on the contrary, its enrichment (desorption) at the expense of material of a firm phase is result.

Relevance of a subject follows from the practical importance of the considered circle of tasks.

Scientific novelty of an electronic scientific resource consists that it is devoted to the numerical decision of system of the equations of process of nonequilibrium sorption in a one-dimensional case by a pro-race method.

The electronic scientific resource is designed for undergraduates of a profile "Mathematics and mechanics of" the direction "011000 Mechanics. Applied mathematics",

graduate students and experts in the field of the differential equations and numerical methods for formation of fundamental mathematical outlook.

The electronic scientific resource aims to help undergraduates, to graduate students of a physical and mathematical profile successfully to master fundamental knowledge of the differential equations and final and differential methods, to deepen the gained knowledge for the solution further of serious research problems.

**2. Functional purpose of a product, scope, its restrictions**

This work is continuation of research of the problems which were considered earlier in article of authors [1] where global unambiguous resolvability of the multidimensional initial and regional task modeling process of nonequilibrium sorption is proved.

Various models for the description of problems of equilibrium and nonequilibrium sorption are investigated in works [1]–[4].

In an electronic scientific resource introduction, three chapters, the conclusion and the list of references are presented. The detailed review of the mathematical works connected with problems of equilibrium and nonequilibrium sorption is provided in introduction.

Practically all liquids which are found in the nature represent solutions, i.e. mixes of two or more substances (components). The filtration in porous environments of the liquids and gases containing associated with them (dissolved, weighed) solid substances, is followed by diffusion of these substances and a mass exchange between liquid (gas) and firm phases. The most widespread types of a mass exchange are sorption and a desorption, an ionic exchange, dissolution and crystallization, a kolmatation, sulphation and a suffosion, a parafinization. Taking into account features of physical and chemical interaction of solutions with breeds of layer problems of equilibrium and nonequilibrium sorption are considered.

In chapter 1 the problem definition and differential approximations according to the implicit scheme of a differential problem of process of nonequilibrium sorption are given in a one-dimensional case; program realization of a task by means of the Turbo Pascal system and means *of Microsoft Excel* is given in chapter 2. Listings of programs in *Maple-language* are given in a chapter 3. Comparison and the analysis of the numerical results received in the Turbo Pascal and Maple systems are spent in prison. Results of numerical calculations are given in the Appendix.

**3. Special conditions and requirements of organizational, technical and technological character**

Operating system – *Windows HR Professional 2000* above, the Microsoft Office package, the Adobe Reader program.

**4. The used technical means**

The electronic scientific resource is executed in the Turbo Pascal system and with visualization of calculations by*Microsoft Excel,* and also in a specialized mathematical Maple package. The detailed description of algorithm of computer modeling is given in a MiKTeX package and can be visualized in the WinEdt editor. Delivery of a product in the form of the file converted in PDF format is possible.

**5. Work with an electronic scientific resource**

The presented electronic scientific resource is addition to classical textbooks for the differential equations and final and differential methods and promotes more rational approach to studying of theoretical material.

The theory of problems of a filtration of solutions in soil and an ionic exchange – one of the important field of mathematics which knowledge of basic provisions is necessary for the solution of complex and actual problems. Studying of this theory has to promote formation of modern scientific thinking at undergraduates and graduate students.

The electronic scientific resource will help undergraduates, graduate students, and also future experts to master in the field sciences terminology and necessary concepts of the theory of a filtration, to study laws and postulates. Undergraduates have to be able to apply basic formulas and statements at the solution of various scientific problems of close subject; to carry out search

of various solutions of tasks; to learn to use theoretical material in practice, to be able to read and understand, analyze and systematize the stated material.

**6. Conditions of transfer of documentation or its sale**

Concerning acquisition of an electronic scientific resource to address authors by e-mail kalievia@mail.ru or sabitovags@mail.ru, and also to the address: 453103, Republic of BashkoAdvertising and technical descriptionstan, Sterlitamak, Lenin Avenue, 49, Sterlitamak branch of FGBOU VPO "Bashkir state university", department of the mathematical analysis to Kaliyev I.A. or department of applied informatics and Sabitova G. S. programming.

**7. List of references**

Kaliyev I.A., Sabitova G. S. About one problem of nonequilibrium sorption//the Siberian magazine of industrial mathematics. – 2003. – Volume VI. – No. 1(13). – Page 35-39.

Lapidus L., Amundson W.R. Mathematics of adsorption in beds. VI. The effect of longitudinal diffusion in ion exchange and chromatographic columns//J. Phys. Chem. 1952. V. 56. P. 984-988.

Coats K.H., Smith B.D. Dead and pore volume and dispersion in porous media//Soc. Petrol. Eng. J. 1964. V. 4, N 1. P. 73-84.

Development of researches on the theory of a filtration in the USSR / Under the editorship of P. Ya. Polubarinova-Kochina. M.: Science, 1969. 546 pages.

## ADVERTISING AND TECHNICAL DESCRIPTION "Program for Formation of the Database on Controlled Parameters of Processes of Production of Woven Geotextile Materials"

*Kusenkova A.A., Gruzinceva N.A., Gusev B.N.*

***UDC*** *519.711; 004.72*
***GRNTI*** *28.17.31, 28.21.27*

**1. Functional purpose of a product, area of its application and appointment**

The offered software product is intended for formation of the database on controlled parameters of processes of production of woven geotextile materials. This program is applicable in educational process of HIGHER EDUCATION INSTITUTIONS for the direction of preparation "Standardization and certification", within subject matters "Standardization, certification and metrology" and "Quality management"; in postgraduate education for branch of sciences - 05.00.00 "Technical science", and also in research work of students, graduate students and doctoral candidates.

**2. Formation and description of work of a computer method of formation of the database on controlled parameters of processes of production of woven geotextile materials**

The organization of technical control in the course of production of woven geotextile materials is necessary for ensuring production of woven geotextile materials of the required quality. For the optimum organization of system of technical control it is necessary to create the database of controlled objects. The flowchart of algorithm of formation of the database is submitted in figure 1.

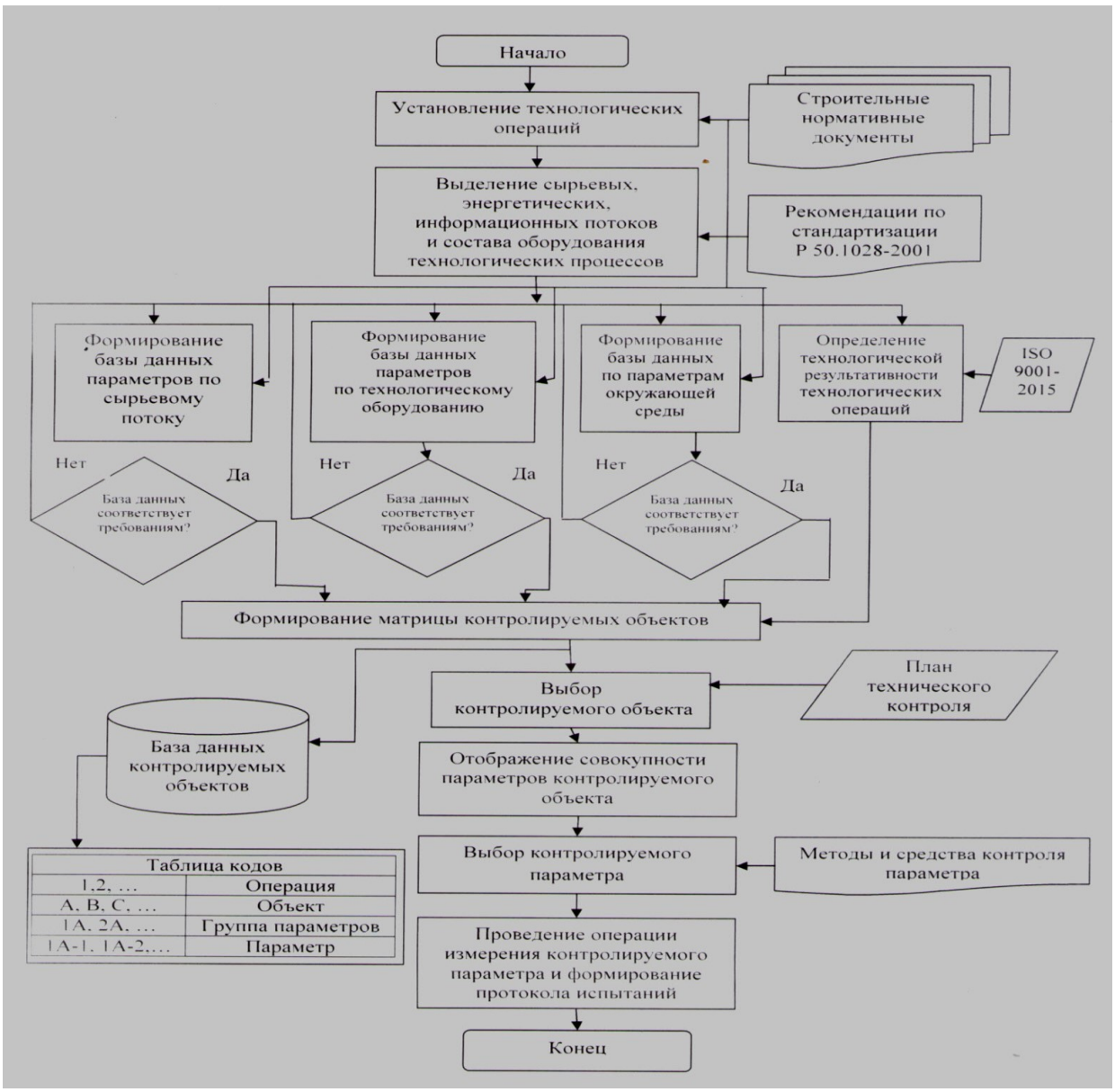



Fig. 1 Flowchart of algorithm of formation of the database on controlled parameters of processes of production of woven geotextile materials

At the first stage, on the basis of the analysis of technological process of production of woven grids the corresponding technological operations are established. As an example the Russian-German company of Bauteks Gus-Khrustalny which makes fibreglass meshes on the equipment of firm of Dornye is chosen. According to the production technology of fibreglass meshes installed the list of technological operations (preparation of system of the main nitek to weaving, giving of threads a duck on the weaving loom, formation of a woven cloth, drawing impregnation on a woven grid, taking-up in a roll of a woven grid). Further on each technological operation according to R. 50.1028-2001 "Recommendations about standardization. Information technologies of support of life cycle of production. Methodology of functional modeling" allocated raw, power, information streams, and also structure of the equipment of technological processes.

At the following stage for each allocated object it was formed databases of parameters, using construction normative documents. For formation of the database of parameters on a raw stream for each technological operation entrance and output raw streams were allocated, for example at the operation "Drawing Impregnation on a Woven Grid" as an entrance raw stream serves "the severe cloth", and an output raw stream – the impregnated material. At establishment of entrance and output raw streams their characteristics are reflected in the database.

When forming the database of parameters on processing equipment for each operation equipment parameters were allocated, and also for control of parameters necessary normative documents (state standard specifications, MI, ODM) for implementation of measuring operations are submitted. For example, for the operation "Formation of a Woven Cloth" the following parameters of the equipment were allocated: frequency of rotation of the main shaft, establishment of optimum values, assessment of technical condition. Normative documents for the "Frequency of Rotation of the Main Shaft" parameter are submitted in table 1.

Table 1 – Normative documents

| Document | Name of the document |
|---|---|
| GOST 19716-81 | Automatic weaving looms pneumorapier. General specifications |
| MI 2091-90 | State system of ensuring unity of measurements. Measurements of physical quantities. General requirements. |
| MI 2246-93 | Recommendation. GSOEI. Errors of measurements. Designations |
| MI1552-86 | State system of ensuring unity of measurements. Measurements straight lines single. Estimation of errors of results of measurements |

The database on parameters of environment was characterized by the corresponding parameters: humidity, temperature, level of dust content and others. According to requirements of the international ISO 9001-2015 standards "Quality management system." Its productivity is provided to determine requirements by each production and administrative process. In case of creation of methods of definition of indicators of productivity (efficiency) on each technological process their further use and as functions of desirability is possible. Understand as the concept "productivity" … extent of realization of the planned activity and achievement of the planned results". The standard values planned for this process should understand degree of compliance of values of informative quantitative characteristics of simple primary properties of output production as *technological productivity of process* them. Determination of technological productivity of technological operations promotes formation of a matrix of controlled objects. And also, if databases conform to requirements, then the matrix of controlled objects is formed. At the following stage the database of controlled objects was presented in the estimated coded form. By means of the constructed matrix of controlled objects it is possible to choose a certain controlled object (according to the plan of technological control), then there is a display of set of parameters of controlled object, the choice of a certain parameter and in end operation of measurement of controlled parameter and formation of the test report is performed.

At the following stage the control object was chosen, set of its parameters is displayed, controlled parameter is chosen and in end operation of measurement of controlled parameter was performed and the test report is created.

**3. The used technical means**

For work with the program it is necessary to have the personal IBM Pentium 4 computer with the Microsoft Office operating system 2007.

**4. Special conditions and requirements of organizational, technical and technological character – the MatLab programming language.**

**5. Conditions of transfer of documentation or its sale** – by agreement. If necessary the program can be finished.

# ADVERTISING AND TECHNICAL DESCRIPTION "Electronic manual "Use of Stamm 2.1 at the Solution of Scientific and Technical Tasks" (directions: 23.03.01 - Technology of transport processes, a profile – a bachelor degree; 23.04.01 - Technology of transport processes, a profile – a magistracy)"

*Manyashin A.V.*

***UDC 378***
***GRNTI*** *14.35.07, 73.01.77*

**1. Functional purpose of development, scope, its restrictions**

1.1. Purpose of a product

The electronic manual is intended for engineers, teachers, graduate students and students as the methodical management for research of working processes of knots and units of cars by means of the specialized interfaces and other tasks connected with use of information technologies on the motor transport.

Materials of the presented grant are used for a number of years by the author when training students of transport specialties.

The electronic version can be used as locally on the personal computer or the tablet, and remotely through the Internet. For this purpose on the page of the Center of remote formation of the Tyumen state university two versions of an electronic grant are laid out.

Some restrictions for use of the manual is need of installation of specialized programs for reading the e-books, in case of absence preset.

The grant is developed according to the last recommendations of the Ministry of Education and Science of the Russian Federation. According to recommendations of this body of January 20, 2015.

It has to correspond on decorating and structure to a printing form.

Besides, "the electronic textbook" has to contain multimedia elements - audiofragments, galleries of images, videos, the presentations, animation, interactive maps, exercise machines, laboratory works, experiments, etc.

The textbook has to work "on three or more operating systems not less than two of which - for mobile devices" and to be reproduced both on the computer, and on the tablet. Besides, in "textbook" there has to be a function allowing to do bookmarks and to keep notes.

1.2. General characteristic of a grant

The grant consists of the following sections, each of which is issued as a separate structural element in the database according to requirements of the Ministry of Education and Science to similar editions. The structure of an electronic grant is given below.

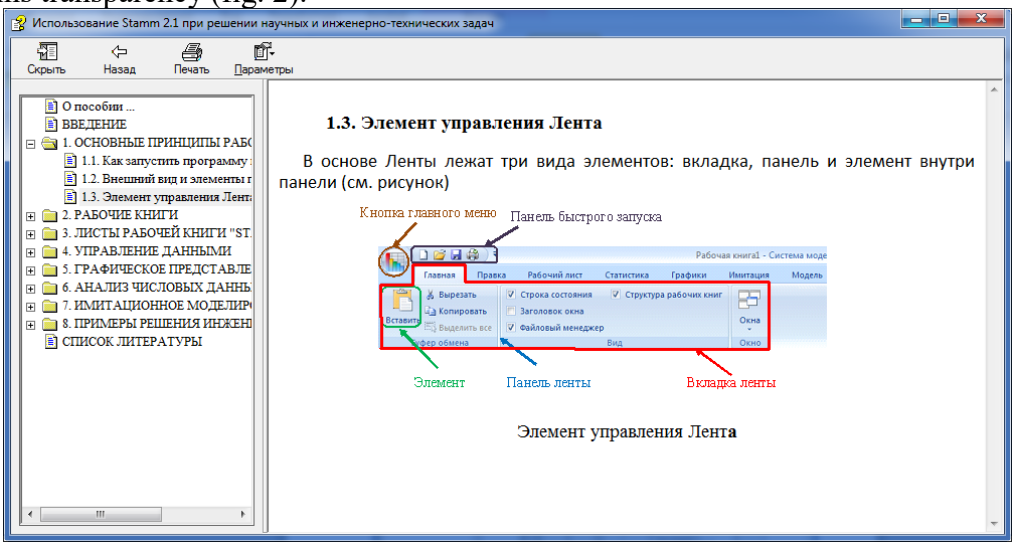
INTRODUCTION
1. BASIC PRINCIPLES OF WORK WITH THE PROGRAM
2. WORKBOOKS
3. SHEETS OF THE WORKBOOK "STAMM"
4. DATA MANAGEMENT
5. GRAPHICAL REPRESENTATION
6. ANALYSIS OF NUMERICAL DATA OF "STAMM"
7. IMITATING MODELLING
8. EXAMPLES OF THE SOLUTION OF ENGINEERING TASKS
LIST OF REFERENCES

Each of sections contains the corresponding subsections.

The general view of the textbook working under management of Windows OS is presented in fig. 1.

Figure 2 Electronic textbook of the chm format

Information in sections contains illustrations in a format the 32-bit png format which maintains transparency (fig. 2).




Drawing 3 Illustrations of an electronic grant

The grant contains in the text cross references on its structural elements (fig. 3), and also to external URL addresses.

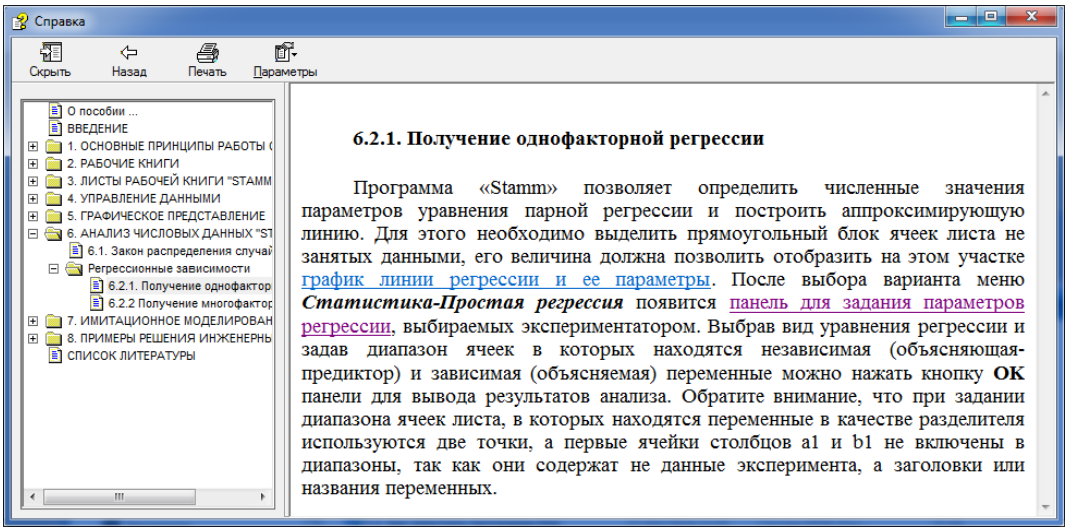



Fig. 3. Cross references

1.3. Additional opportunities

The maintenance of a grant or any section can be unpacked, directly from a window of a resource (fig. 4).

The size of panels for a conclusion of maintenance of a grant and the text of the chosen sections are adjusted by the user. The contents display panel can be also temporarily hidden for convenience of reading.

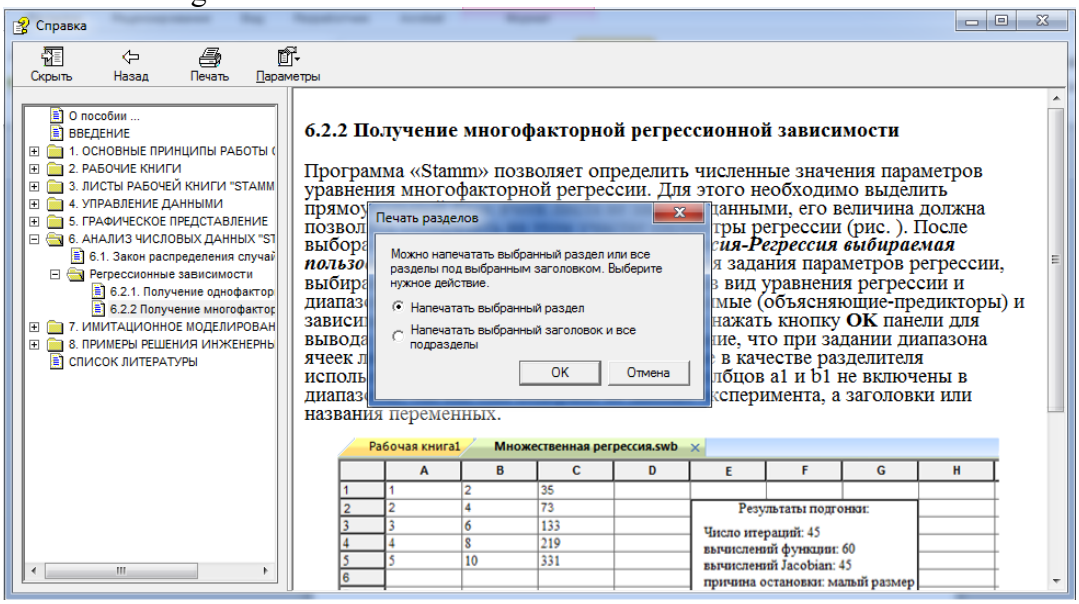



Fig. 4. Printing of the text

1.4. Work in the environment of Android

The electronic resource works in the Android operating system for mobile platforms. Use of a grant on the tablet by means of the Cool Reader program (fig. 5) is given below.

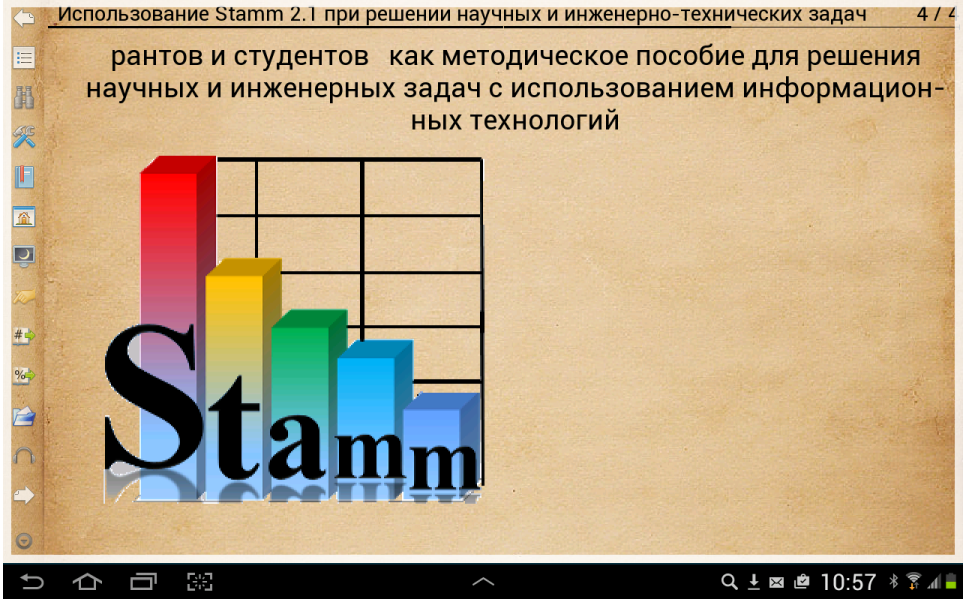



Fig. 5. Reading sections of a grant in "Cool Reader"

**2. The used technical means**

The electronic resource works in the Windows and Android operating system. Existence in the Android system of the program of reading the chm format, in case of absence is obligatory, various options of similar ON are in Play Market Google. Including free. The resource in the form of one Stamm.chmfile extends.

**3. Special conditions of application and requirement of organizational, technical and technological character**

There are no special requirements to use, the user has to have initial skills of work with the help Windows system.

**4. Conditions of transfer of documentation on development or its sales**

The resource can be transferred free of charge for use to any educational and other institutions of Russia from the written consent of the author.

## ADVERTISING AND TECHNICAL DESCRIPTION "Coordination of Parameters of Mathematical Models of the Asynchronous Car in a Generating Operating Mode"

*Federal public budgetary educational institution of the higher education "Omsk state technical university"*

*Hamitov R.N., Arhipova O.V., Krivyh YU.S., Remizov P.N., CHerkasova A.V.*

***UDC** 62-523*
***GRNTI** 45.29.31, 45.41.31*

**1. Functional purpose of the program**

Now the important place is taken by the technologies demanding operation of asynchronous electrical machines in the generating mode – welding processes, transformation of wind power, crane mechanisms and others. In use the electrical machine, owing to various reasons (natural wear of mechanical parts, isolation aging, etc.), there is a change of values of its electromagnetic parameters. Respectively, there is a need of the coordinated correction of parameters of mathematical models of various levels of hierarchy applied to the solution of problems of management in generating operating modes as allows to execute this software product. An additional option of the program is creation of operational characteristics of the asynchronous car in motive and generating operating modes. The offered program is developed in the environment of Delphi in the Object Pascal language.

**2. Interface**

The program consists of three tabs: a main window in which data for calculation are entered; and two tabs in which schedules of performance and mechanical data of the asynchronous engine are displayed.

**3. The used technical means**

The program is written in the environment of Delphi in the Object Pascal language.

The following parameters of the engine are necessary for normal work of the program:

$R2nom -$ nominal sliding, kW;

$cosf - power\ factor$;

$Unom -$ rated linear voltage, In;

$\eta$ –efficiency, %;

The parameters specified above are necessary for determination of basic resistance:

$$Zb = ufni1nom \quad —, Ohm; \ (1)$$

$$Ufn \quad = unom3 \frac{}{\sqrt{}}, In; \ (2)$$

$$\mathrm{I1} \quad = \mathrm{p2nom3}\square\mathrm{ufn} \quad /( \quad \cdot \eta \cdot \mathrm{cosf}), \mathrm{And}; \ (3)$$

Basic resistance is necessary for the translation from relative units in called and vice versa.

$n1 -$ frequency of rotation of magnetic fields of the stator and rotor, $\mathrm{ob.min/.}$;

$f$ –frequency of a power line, Hz;

$R1 \ , X1$ – the active and inductive resistance of dispersion of windings of the stator; $R2' \ , X2'$ – the active and inductive resistance of dispersion of the given rotor windings;

$R0 \ , X0 -$ active and inductive resistance to the magnetizing branch.

After introduction of necessary data of the engine it is necessary to press the virtual Result button then a transfer of units will be made and schedules are constructed.

The basic settlement formulas for the translation and the G-shaped scheme in

T-shaped.

It is given:

$R1'$ , $X1'$ – the active and inductive resistance of dispersion of windings of the stator; $R2''$ , $X2''$ – the active and inductive resistance of dispersion of the given rotor windings;

$R0$ , $X0$ – active and inductive resistance to the magnetizing branch.

$$X1 = 2X1'XoXo + Xo2 + 4X1'Xo \quad \sqrt{\phantom{xxxxxxxx}}; \qquad (4)$$

$$R1 = R1 \quad ' \cdot X1X1 \frac{}{'}; \qquad (5)$$

$$c = R1'R1 \frac{}{}; \qquad (6)$$

$$X2' = \frac{X2''}{with}; \qquad (7)$$

$$R2' = \frac{R2''}{with}; \qquad (8)$$

$R0$ , $X0$ – *do not change the values when translating in equivalent circuits.*

For the transfer from relative units to the translated resistance called all are multiplied by $Zb$ and if it is required from called to transfer to relative then parameters it is necessary to divide into $Zb$ .

**4. Special conditions of application and requirement of organizational, technical and technological character**

Conditions of application have to conform to the modern requirements imposed to operation of the software. The program demands the installed Delphi package in the Object Pascal language and can be started from any carrier.

**5. Conditions of transfer of program documentation**

You have the right to extend and use this software in non-commercial purposes, use of the program for commercial purposes, without consent of the developer it is forbidden.

It is forbidden to open technology, to decompile the program or in a different way to change the program and the accompanying documentation.

The program is delivered on conditions "as is". The developer of the program does not provide concerning the program any guarantees, obvious or implied, and does not bear responsibility for any obvious, casual, indirect or other damage which resulted from use or possession of the program.

If you do not agree with this license agreement or any paragraphs of the agreement conflict to your local laws, you are obliged to remove this software product from your computer and to stop use of the program.

**6. The list of the used literature**

Kovalyov, V. Z. Modeling of electrotechnical complexes and systems as sets of the interacting subsystems of various physical nature: Dis … dokt. tekhn. sciences / V. Z. Kovalyov. – Omsk, 2000. – 312 pages.

Scherbakov, A. G. Metodika of identification of parameters of asynchronous engines / A. G. Scherbakov//Omsk scientific bulletin. – 2011. – No. 1 (97). – Page 112-116.

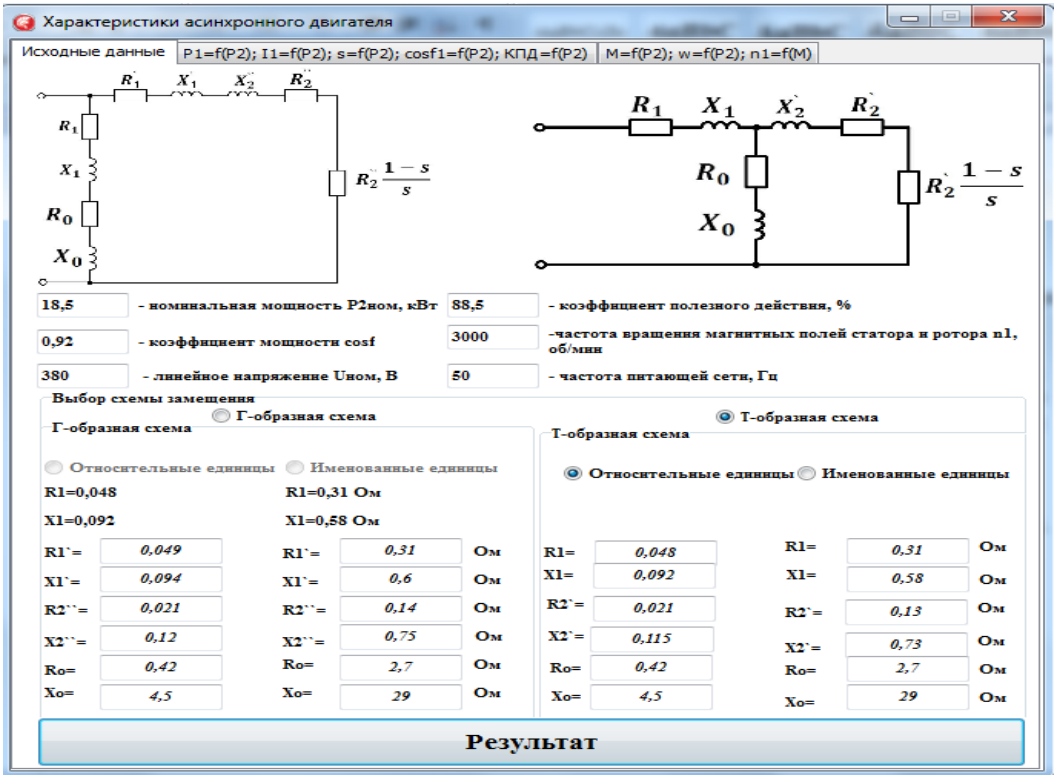



Fig. 1. Main window of the program.

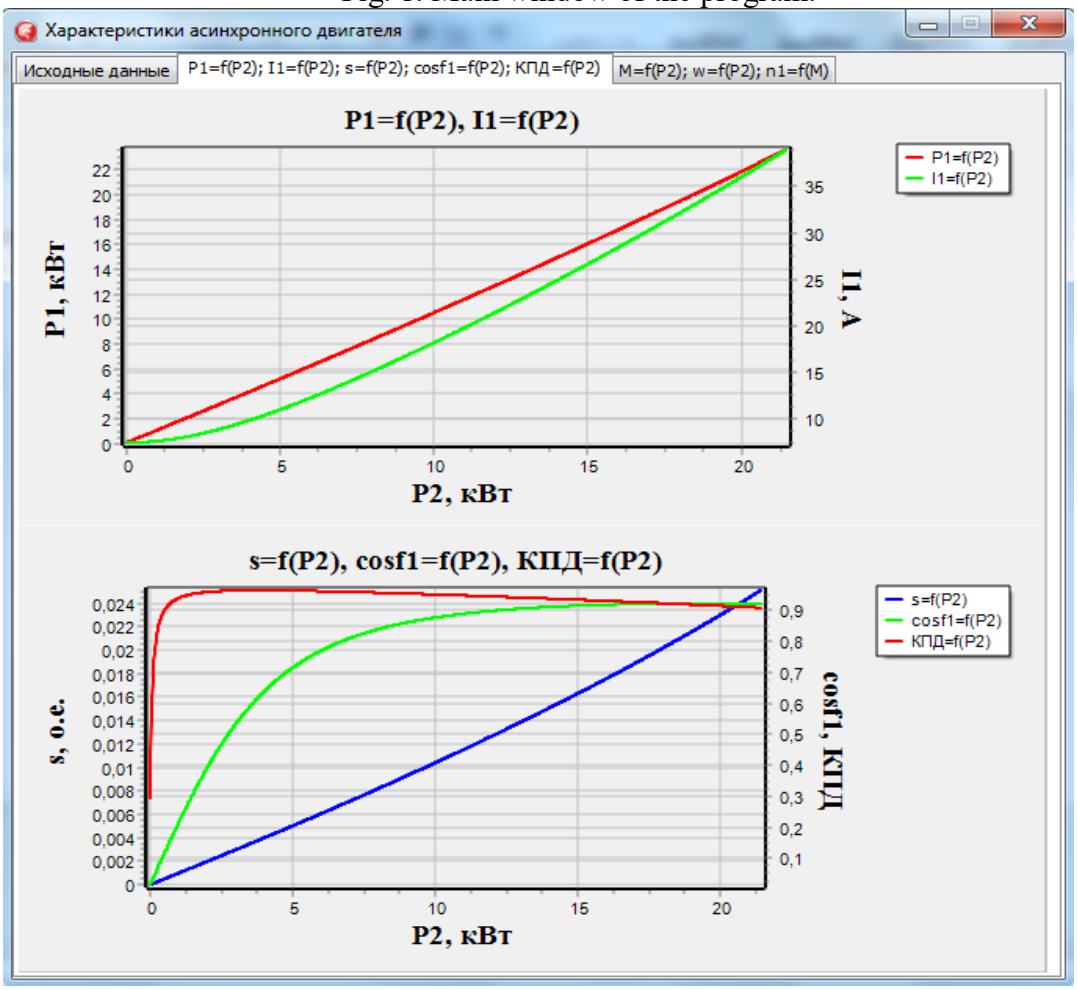



Fig. 2. Performance data of the engine.

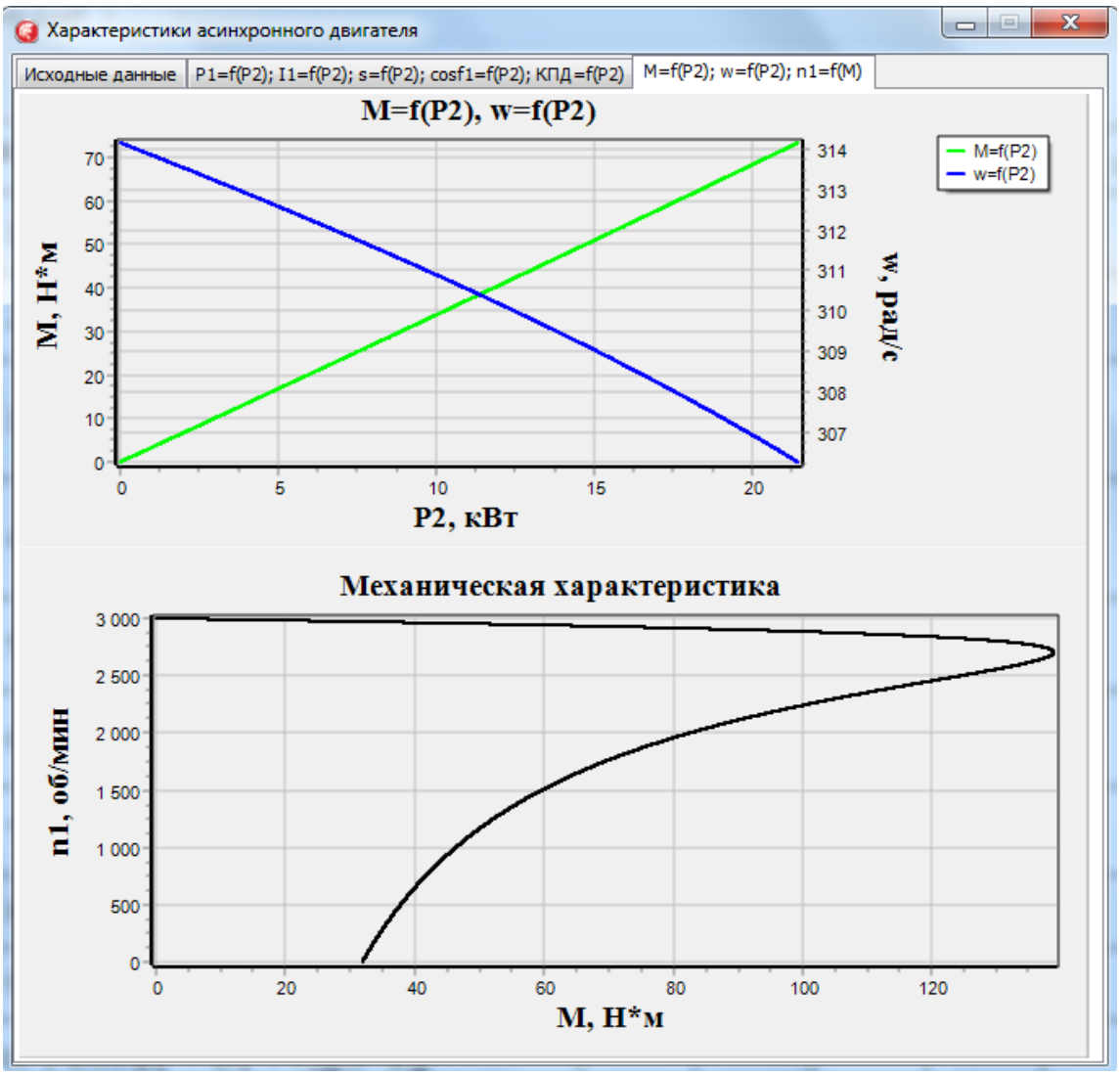



Fig. 3. Performance and mechanical data of the engine.

## ADVERTISING AND TECHNICAL DESCRIPTION "Algorithm of Calculation of a Resource of Lubricant in the Lubrication System Crushing Razmolnogo the Equipment"

*Federal public budgetary educational institution of the higher education "Omsk state technical university"*

*YArmovich YA.V., Korneev S.V., Kuznecova V.N.*

***UDC** 621:658.58*

**1. Functional purpose of the program, scope, its restrictions**

This program is intended for reduction of expenses at operation crushing razmolnogo the equipment, connected with a big consumption of lubricant.

At operation of the crushing razmolnogo equipment (CRE) very big consumption of industrial oils because of need of their replacement is observed. Lubrication systems with a capacity up to 60 m3 occur at this type of the equipment [1]. The DRO lubricant systems provide operability of bearings of sliding like babbit-steel which are used in clowns of conical crushers and support of drum mills. These bearings are bearing, influence from the weight of the equipment and the processed raw materials, and also reaction from dynamic impact on the processed material is the share of them. The resource of these knots seldom exceeds the 4000th p [2]. As a result repair work with a long stop of the equipment is annually carried out that is reflected in output.

For definition of the reasons of loss of operating state of lubricant of the DRO lubrication system was more than 200 tests of oils from the lubrication system of conical crushers of KRD 900/100 and KSD 2200, MShR 3,2/2,8 mill from the enterprises of PAO "Norilsk Nickel MMC, JSC Almalyksky MMC and Zhezkazgantsvetmet LLP is analysed. Results are presented in the form of histograms (figure 1 - 5).

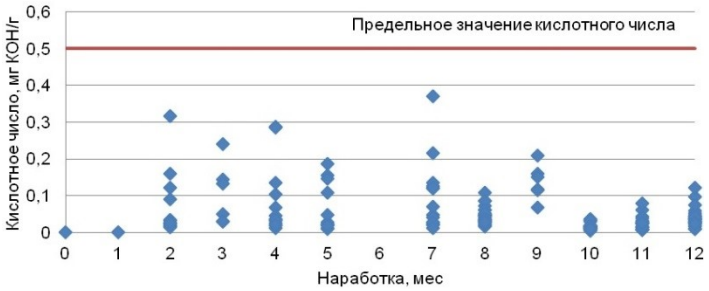
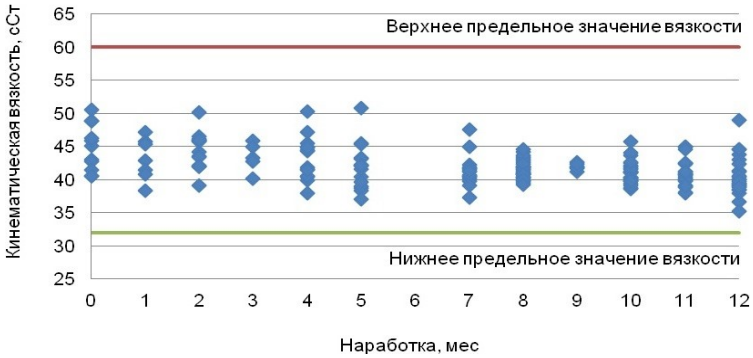
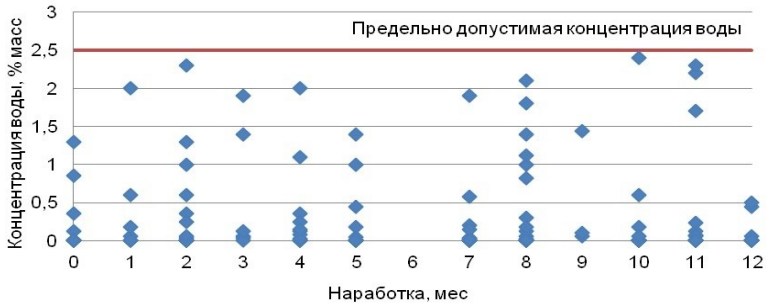


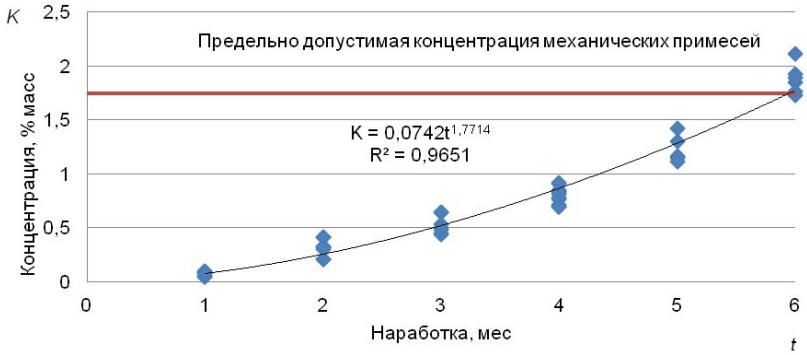

Fig. 1 Change of acid number of lubricant for a year of operation in the DRO lubrication system




The fig. 2 Change of Viscosity of Lubricant for a year of operation in the DRO lubrication system



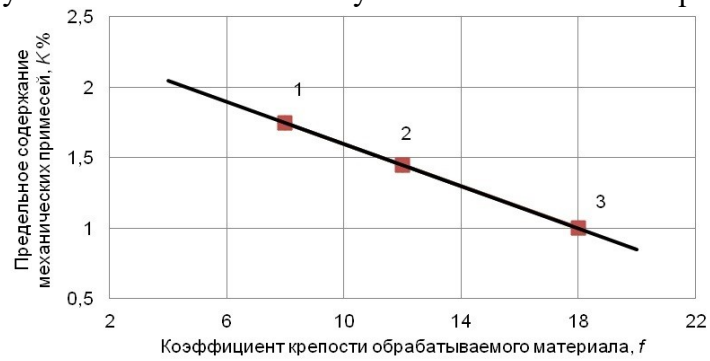

The fig. 3 Change of Concentration of Water in Lubricant for a year of operation in the DRO lubrication system




The fig. 4 Process of Accumulation of Mechanical Impurity in lubricant of the DRO lubrication system in 6 months

By results of the conducted researches it is established that lubricant saturation is mechanical impurity and water which influence change of its acid number and viscosity the main reason for loss of operating state of lubricant of the DRO lubrication system. Intensive saturation

of lubricant mechanical impurity and water comes from the processed raw materials, because of leakage of lubrication systems. Quantitative value of extreme concentration of mechanical impurity for the DRO lubrication system was defined in the previous works [3].




The fig. 5 Dependence of Extreme Concentration of Mechanical Impurity on Fortress of the Processed Material on M. M. Protodyakonov's scale

1 - Norilsk Nickel MMC - 1,75% (f=8); 2 - Zhezkazgantsvetmet – 1,45% (f=12); 3 - Almalyk MMC – 1% (f=18)

As a result of the conducted researches [3] dependence of extreme concentration of mechanical impurity on coefficient of fortress of the processed material on a scale of professor M. M. Protodyakonov was received. What allowed to receive dependence of determination of extreme concentration of mechanical impurity:

$$K_{П} = -0{,}075f + 2{,}35. \qquad (1)$$

where *KP* – extreme concentration of mechanical impurity, %; *f* – coefficient of fortress of the processed material on a scale of professor M. M. Protodyakonov.

For providing operating state of the DRO lubrication system it is necessary to provide the content of mechanical impurity at the set level that in turn can be carried out replacement or purification of lubricant. At the same time frequency of replacement of lubricant has to be proved not to allow excessive expenses on service and expenses from equipment downtime under repair [4].

The model of justification of durability of technical systems and cars of professor A.M. Sheining is taken as a basis of a method of calculation of frequency of replacement of lubricant of the DRO lubrication system [5]. Criterion function of a minimilization of costs of carrying out maintenance is its cornerstone:

$$C(T) = \frac{\upsilon_{Ц}(T)}{M}\frac{C_{ам.о} + C_{Р} + C_{К.П.}}{T} + \sum_{i}\frac{C_{обi}}{T_{обi}} \to \min; \qquad (2)$$

where $\upsilon_{Ц}(T)$ — number of repair cycles for car service life before write-off; *M* — the coefficient determining duration of depreciation charges; *Sam.o* — the average size of depreciation charges is over one repair cycle of the car; *Sr* — costs of elimination of refusals and malfunctions of the car in the course of repairs for one repair cycle; *SK.P.* — costs of compensation of losses owing to decline in production and increase in a consumption of lubricants at wear of details of the car during one repair cycle; *T* — a resource before the first capital repairs; *Sobi* — costs of maintenance *of i* of cars; *Tobi* — frequency of maintenance.

When developing this model the following assumptions were accepted: costs of elimination of refusals and malfunctions do not depend on a time between failures and on value of wear; costs of maintenance do not depend on frequency of its performance; maintenance is carried out regularly with frequency *of Tob* and completely restores favorable conditions for wear of interfaces.

The solution of criterion function (1) *Yip* taking into account their interrelation allows to reveal optimum values of a resource T, frequency of service and extreme wear. For the solution of criterion function regularities are initial $И = \varphi(T_{об})$; $C_{К.П} = \varphi(И)$; $K_{ТИ} = \varphi(T)$, where *KTI* — coefficient of technical use.

The transformations which are carried out by professor V.A. Zorin [6] allow to receive from criterion function (1) of a formula of calculation of optimum values of indicators of durability which are the cornerstone of model for determination of optimum values of indicators of durability of structurally simple interfaces and assembly units which cause of failure extreme wear is. The model serves for optimization of a resource and frequency of maintenance. The size of extreme wear is determined by criterion of impossibility of further operation of object. When calculating it is set and is not optimized.

Criterion function for this model has an appearance

$$C(T) = \frac{\upsilon_{Ц}(T)}{M} \frac{C_{ам.о} + cИ_{П}^{\beta}}{И_{П}} bT_{об}^{\alpha-1} + \frac{C_{об}}{T_{об}} \to \min. \quad (3)$$

where *SP* – extreme wear; *with* — the coefficient depending on an operating mode and service conditions of the car; $\beta$ — the exponent caused by a design and a functional purpose of interface; $\alpha$ and $b$ - the empirical coefficients which are parameters of regularity of wear are defined in use.

Optimum frequency of service

$$T_{об.опт} = \left( \frac{И_{П}}{bN_{об}} \right)^{1/\alpha}. \quad (4)$$

Optimum resource

$$T_{р.опт} = N_{об} T_{об.опт}. \quad (5)$$

where *Nob* - number of obsluzhivaniye for an optimum resource.

On the basis of the carried-out analysis of accumulation of mechanical impurity in the DRO lubrication system high-quality coincidence of a curve of wear of couple of friction, including babbit - steel, and a curve of accumulation of mechanical impurity is established. Besides, in use of the basic bearing of sliding of DRO to establish change of mass or linear wear happens it is almost impossible, or this process is considerably labor-consuming and demands big time and material inputs. Therefore it is supposed to estimate a condition of the DRO lubrication system and process of its wear on an indicator of extreme concentration of the KP mechanical impurity.

$$T_{опт} = \left( \frac{K_{П}}{bN_{об}} \right)^{1/\alpha}. \quad (6)$$

At determination of frequency of replacement of lubricant for the DRO lubrication system the number of obsluzhivaniye is accepted to an optimum resource equal 1. Values of coefficients $\alpha$ and $b$ are defined as a result of under control operation and presented in figure 4. Results of calculations of frequency of replacement of lubricant for the DRO lubrication system for various mining and metallurgical enterprises are presented in table 1. The choice of data of the enterprises is caused by the fortress of the processed material, than you material fortress, extreme concentration of mechanical impurity [7] has to be that less.

According to the provision on scheduled preventive maintenance of the equipment [8], it is necessary to make replacement of lubricant each 1620 hours that corresponds to three months of operation of the equipment. Thanks to the carried-out calculations it is possible to prolong time of operation of lubricant of the DRO lubrication system.

The table 1 Frequency of Replacement of Lubricant for the DRO lubrication system

| Enterprise | KP, % | Operating time, month |
|---|---|---|
| Norilsk Nickel MMC | 1,75 | 5,96 |
| Zhezkazgantsvetmet | 1,45 | 5,36 |
| Almalyk MMC | 1 | 4,35 |

As a result of researches values of the actual operating time of the DRO lubrication system to carrying out maintenance during which lubricant has to be purified of mechanical impurity or it is replaced with new oil are received. For ensuring tightness of the lubrication system in general in a maintenance time replacement of epiploons, laying and cleaning of the bottom and walls of a tank of the lubrication system from mechanical impurity is recommended.

**2. The used technical means.**

The following equipment rooms and software are necessary for work of the program of calculation of a resource of lubricant in the lubrication system crushing razmolnogo the equipment on the computer of the user:

1. ° C: MicrosoftWindows7.
2. COMPUTER type: IBM PC-sovmest. Personal computer.
3. Processor frequency not nizhe1 GHz.
4. Random access memory of 512 MB.
5. Existence not less than 100 MB of an empty seat on a disk.

**3. Special conditions of application and requirement of organizational, technical and technological character**

Conditions of application have to conform to the modern requirements imposed to operation of the software. The program demands the installed Microsoft Office package and can be started from any carrier.

**4. Conditions of transfer and sale of program documentation**

The program of calculation of an installation site of an overflow partition crushing razmolnogo the equipment and documentation to it can be transferred to the interested person or the organization on the basis of the contract with OMGTU and authors according to the current legislation in a tank settler of the lubrication system.

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6. Zorin, V. A. Bases of operability of technical systems: the textbook for student. vyssh. studies. institutions / V. A. Zorin. - M.: Publishing center "Akademiya", 2009. - 208 pages.
7. Yarmovich, Ya. V. O of a possibility of increase in a resource of lubricant in lubrication systems crushing razmolnogo the equipment / V. N. Kuznetsova, Ya. V. Yarmovich//Architecture, construction, transport [an electronic resource]: materials of the International scientific and practical conference for FGBOU VPO'S 85 anniversary of "SIBADI", - the Electron. it is given. – Omsk: SIBADI, 2015.
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# ADVERTISING AND TECHNICAL DESCRIPTION "Identification of Parameters of Mathematical Model of the Asynchronous Car in a Generating Operating Mode"

*Federal public budgetary educational institution of the higher education "Omsk state technical university"*

*Hamitov R.N., Arhipova O.V., Krivyh YU.S., Remizov P.N., CHerkasova A.V.*

***UDC*** *621:658.58*
***GRNTI*** *55.01.83, 55.03.05, 55.03.11*

## 1. Functional purpose of the program

Now the asynchronous car is the most widespread electrical machine at realization of various technological processes. The important place is taken here by the technologies demanding operation of the specified type of electrical machines in the generating mode – welding processes, transformation of wind power, crane mechanisms and others. In use the electrical machine, owing to various reasons (natural wear of mechanical parts, change of service conditions, isolation aging, etc.) there is a change of values of its electromagnetic parameters. Respectively there is a need of correction of parameters of an equivalent circuit of the electrical machine used at the solution of tasks of the forecast and management in generating operating modes. The constructed software product allows to identify parameters of the T-shaped equivalent circuit and corresponding mathematical model. In the identified parameters creation of characteristics of the asynchronous car in generating and motive operating modes is carried out.

The offered program is developed in the environment of Delphi in the Object Pascal language.

## 2. Interface

Having started the program, in a main window fields of parameters of the T-shaped equivalent circuit of the asynchronous engine are filled:

$snom -$ nominal sliding, lake e.;

$n1 -$ frequency of rotation of magnetic fields of the stator and rotor, $ob.min/.$;

$R1$ $,X1$ – the active and inductive resistance of dispersion of windings of the stator, Ohm;

$R2'$ $,X2'$ – the active and inductive resistance of dispersion of the given windings of a rotor, Ohm;

$R0$ $,X0 -$ active and inductive resistance to the magnetizing branch of the T-shaped equivalent circuit of the engine, Ohm;

$Uln -$ rated linear voltage, In;

$f$ –the nominal frequency of the feeding tension, Hz.

Further it is necessary to press the virtual Calculation button and to go to the following tab where schedules and parameters of the engine are output.

## 3. The used technical means

The program is written in the environment of Delphi in the Object Pascal language.

The basic settlement formulas used in the program:

$$Z2'2 = (R2's)\ 2 + X2'2 \quad / \quad ,Ohm; \tag{1}$$

$$Z02 = R02 + X02 \quad ,Ohm; \tag{2}$$

$$Z222 = \quad [R0 + (R2's)] \quad / \quad {}^{2+(X0+X2\,')} \quad {}^{2} ,Ohm; \tag{3}$$

$$R20 = R0 \square Z2'2 + R2's \square Z02Z222 \quad [ \quad ( \quad / \quad ) \quad ]/ \quad ,Ohm; \tag{4}$$

$$X20 = X0 \square Z2'2 + X2'2 \square Z02Z222 \quad [ \quad ]/ \quad ,Ohm; \tag{5}$$

$$Z20 = R202 + X202 \sqrt{\quad}, Ohm; \tag{6}$$

$$Zdv = \sqrt{(R1 + R20)2 + (X1 + X20)2}, Ohm; \tag{7}$$

$$I1 = ufnzdv \quad / \quad, And; \tag{8}$$

$$I2' = I1 \cdot Z20Z2 \quad / \quad', And; \tag{9}$$

$$\cos\varphi 1 = (R1 + R20)\ Zdv \quad / \quad; \tag{10}$$

$$P1 = 3 \cdot U\text{фн} \cdot I1 \cdot cos\varphi 1 \quad, W; \tag{11}$$

$$P2 = 3 \cdot I2'2 \cdot R2' \quad {}^{1-s\cdot 0,99s}( \quad )/ \quad, W; \tag{12}$$

$$\eta = P2P1 \quad / \quad . \tag{13}$$

Notes: 1. The coefficient 0,99 in a formula for calculation of useful power on a shaft $of\ P2$ considers existence in the engine of mechanical losses of power ΔPмех .

2. $Ufn - phase$ rated voltage, is defined by expression $of\ Uln3\ /\sqrt{\quad}$ as in a main window of the program linear tension is required.

For determination of nominal parameters of the engine: $R2nom$ , $cosf1nom$ , $\eta$ном , $n2nom$ , $I1$ , $P1$ , makes calculation for formulas (1-13) at nominal sliding $of\ sn$ .

When determining: the moment nominal $Mn$ , the moment of the maximum $Mmax$ , the moment starting $Mpusk$ , uses a formula:

$$M = 3 \cdot ufn2 \cdot r2'\omega 0 \cdot s \frac{}{\cdot [R1+R2's2+X1+X2'2]( \quad / \ ) \ ( \quad )}, N \cdot m.$$

(13)

Where, $\omega 0 = 2 \cdot \pi \cdot fp - / \quad the\ frequency\ of\ rotation\ of\ a\ magnetic\ field\ of\ the\ stator, is\ glad\ /\ with;$

$f - frequency\ of\ the\ feeding\ tension, Hz;$

$p = 3000/n1 - number \quad of\ couples\ of\ poles;$

$n1 - \quad rotation\ of\ a\ magnetic\ field, rm.$

**4. Special conditions of application and requirement of organizational, technical and technological character**

Conditions of application have to conform to the modern requirements imposed to operation of the software. The program demands the installed Delphi package in the Object Pascal language and can be started from any carrier.

**4. Conditions of transfer of program documentation**

- You have the right to extend and use this software in non-commercial purposes, use of the program for commercial purposes, without consent of the developer it is forbidden.
- It is forbidden to open technology, to decompile the program or in a different way to change the program and the accompanying documentation.
- The program is delivered on conditions "as is". The developer of the program does not provide concerning the program any guarantees, obvious or implied, and does not bear responsibility for any obvious, casual, indirect or other damage which resulted from use or possession of the program.
- If you do not agree with this license agreement or any paragraphs of the agreement conflict to your local laws, you are obliged to remove this software product from your computer and to stop use of the program.

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2. Scherbakov, A. G. Metodika of identification of parameters of asynchronous engines / A.G. Scherbakov//Omsk scientific bulletin. – 2011. – No. 1 (97). – Page 112-116.

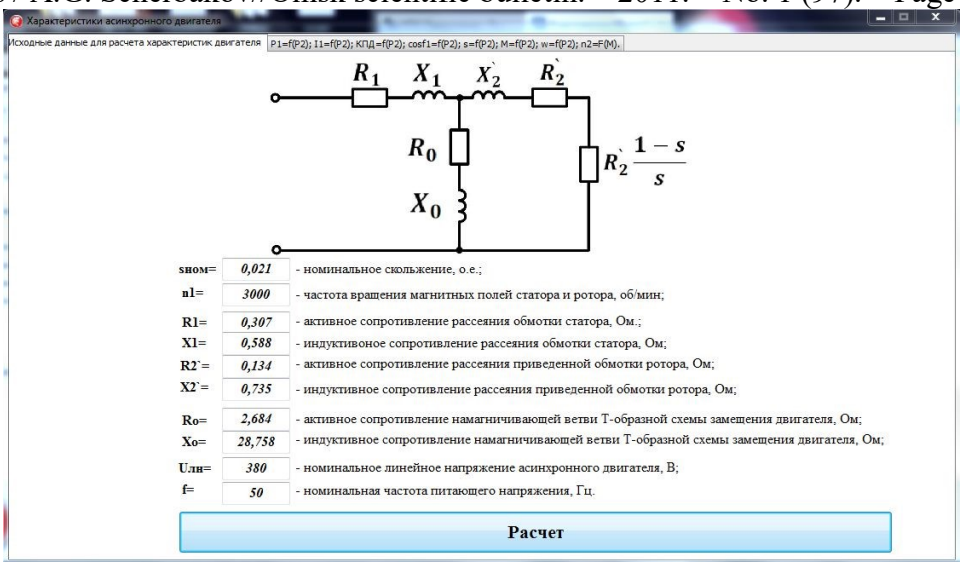


Fig. 1. Main window of the program.

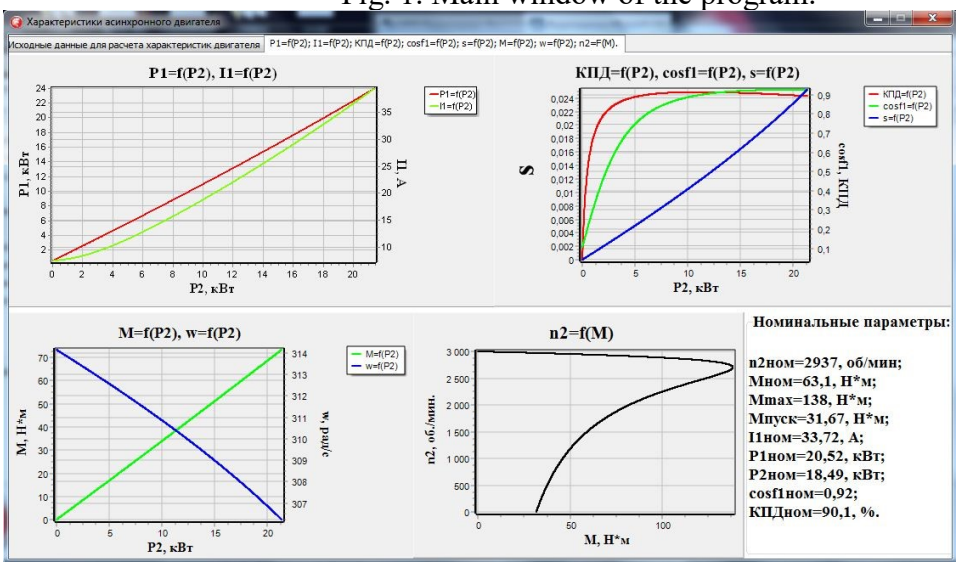


Fig. 2. Performance data of the engine.

## ADVERTISING AND TECHNICAL DESCRIPTION "Numerical Method of the Solution of the Return Spectral Task for the Operator Shturma-Liuvillya on the Column of Treelike Type"

*Martynova YU.V.*

***UDC*** *517.4, 519.71*
***GRNTI*** *51.97.11, 51.75.44, 51.79.54*

The program is intended for realization of a numerical method of the solution of the return spectral task for the operator Shturma-Liuvillya on the column of treelike type. This method is based on property of monotonous dependence own values from parameters of boundary conditions.

On each of *P* linear fragments of a network representing edges of the geometrical count the equation of electric fluctuations in the conductor *by lk* length with distributed by the capacity and inductance is set

$$(U_k)_{tt}(x_k;t) = a_k^{\,2}(U_k)_{x_k x_k}(x_k;t)\,,\, x_k \in (0;l_k)\,,\, k=\overline{1,P}\,, \quad (1)$$

where $a_k^{\,2} = \dfrac{1}{L_k C_k}$, *Sk* and *Lk* – the coefficients of capacity and inductance calculated per unit length wires of the corresponding *k-go* of the conductor.

Let's number trailer knots of the count and the edges corresponding to them from 1 to N. Then boundary conditions describe a situation when *k-y* the conductor is grounded through the concentrated self-induction $\widetilde{L}_k$ and capacity $\widetilde{C}_k$, connected consistently,

$$(U_k)_{x_k}(l_k;t) + C_k\widetilde{L}_k(U_k)_{tt}(l_k;t) + \frac{C_k}{\widetilde{C}_k}U_k(l_k;t) = 0\,,\, k=\overline{1,N}\,. \quad (2)$$

The final coherent count is a tree with *P* tops in only case when when the number of tops (knots) is equal *to P+1*. Therefore we will number the remained branching knots from *N+1* to *P+1* and so that between *i-ym* and (i+1) - ym exactly one edge – the conductor with *Ui* tension existed in knot of branching, $i=\overline{N+1,P}$.

In each of $M = P+1-N$ knots the conditions of a continuity of potential and a condition of balance of currents known as Kirchhoff's laws are set.

For (N+1) - go the knot connected to *D1* in trailer knots we have:

$$\begin{cases} U_1(0;t) = \ldots = U_{D_1}(0;t) = U_{N+1}(0;t); \\ \sum\limits_{i=1}^{D_1}(U_i)_{x_i}(0;t) + (U_{N+1})_{x_{N+1}}(0;t) = 0. \end{cases} \qquad (3.1)$$

For (N+j) - go the knot connected to *Dj* in trailer knots $j=\overline{2,M-1}$, we have:

$$\begin{cases} U_{D_1+\ldots+D_{j-1}+1}(0;t) = \ldots = U_{D_1+\ldots+D_j}(0;t) = U_{N+j-1}(l_{N+j-1};t) = U_{N+j}(0;t); \\ \sum\limits_{i=D_1+\ldots+D_{j-1}+1}^{D_1+\ldots+D_j}(U_i)_{x_i}(0;t) - (U_{N+j-1})_{x_{N+j-1}}(l_{N+j-1};t) + (U_{N+j})_{x_{N+j}}(0;t) = 0. \end{cases}$$

(3.2)

For (N+M) - go the knot connected to *DM* in trailer knots we have:

$$\begin{cases} U_{D_1+\ldots+D_{M-1}+1}(0;t) = \ldots = U_{D_1+\ldots+D_M}(0;t) = U_P(l_P;t); \\ \sum\limits_{i=D_1+\ldots+D_{M-1}+1}^{D_1+\ldots+D_M}(U_i)_{x_i}(0;t) - (U_P)_{x_P}(l_P;t) = 0. \end{cases} \qquad (3.3)$$

According to the chosen designations the number of trailer knots of the studied count is equal $N = D_1 + \ldots + D_M$, then we will receive $D_1 + (D_2+1) + \ldots + (D_{M-1}+1) + D_M = D_1 + \ldots + D_M + M - 2 = N + M - 2 = P - 1$ conditions of a continuity of potential and *M* of conditions of balance of currents. Thus, we receive system from *P* differential equations (1) with *N* boundary conditions (2) and R-1+ *M* conditions in knots of branching (3.1)-(3.3), so we have all *N+P–1+M=2P* of conditions.

Now from an initial and regional task (1)-(3) we will pass to a task to own values.

Let's look for own fluctuations of the relevant dynamic system in a look $U_k(x_k,t) = e^{i\omega t}y_k(x_k),\ k=\overline{1,P}$.

Let's enter designations $\begin{cases} \lambda = \omega^2 > 0, \\ p_{i1} = \dfrac{C_i}{\widetilde{C}_i} > 0, i = \overline{1,N}, \\ p_{i2} = -C_i \widetilde{L}_i \dfrac{\omega^2}{\lambda} = -C_i \widetilde{L}_i < 0, i = \overline{1,N}. \end{cases}$

Then we receive a regional task:

$$a_k^2 y_k''(x_k) + \lambda y_k(x_k) = 0,\ x_k \in (0; l_k),\ k = \overline{1,P}; \tag{4}$$

with boundary conditions

$$y_k'(l_k) + (p_{k1} + \lambda p_{k2}) y_k(l_k) = 0,\ k = \overline{1,N}; \tag{5}$$

and conditions in branching knots:

$$\begin{cases} y_1(0) = \ldots = y_{D_1}(0) = y_{N+1}(0), \\ y_{D_1+\ldots+D_{j-1}+1}(0) = \ldots = y_{D_1+\ldots+D_j}(0) = y_{N+j-1}(l_{N+j-1}) = y_{N+j}(0), j = \overline{2, M-1}, \\ y_{D_1+\ldots+D_{M-1}+1}(0) = \ldots = y_{D_1+\ldots+D_M}(0) = y_P(l_P); \end{cases} \tag{6}$$

$$\begin{cases} \sum\limits_{i=1}^{D_1} y_i'(0) + y_{N+1}'(0) = 0, \\ \sum\limits_{i=D_1+\ldots+D_{j-1}+1}^{D_1+\ldots+D_j} y_i'(0) - y_{N+j-1}'(l_{N+j-1}) + y_{N+j}'(0) = 0, j = \overline{2, M-1}, \\ \sum\limits_{i=D_1+\ldots+D_{M-1}+1}^{D_1+\ldots+D_M} y_i'(0) - y_P'(l_P) = 0. \end{cases} \tag{7}$$

Proceeding from physical sense of a task, coefficients *of pi1*, *pi2*, $i = \overline{1,N}$, have to be material, moreover, *pi1*> 0 and *pi2* <0, $i = \overline{1,N}$.

The return spectral task for a regional task (4)-(7) consists in finding of various values of a vector $\vec{p} = (p_{11}, \ldots, p_{N1}, p_{12}, \ldots, p_{N2})$ coefficients of boundary conditions (5) at which beforehand the set numbers *λ1*, *λ2*, …, *λ2N* are own values.

Let's designate through $u_k(x_k;\lambda)$ and $v_k(x_k;\lambda)$, $k = \overline{1,P}$ linearly - independent solutions of the corresponding *k-go* of the equation from (4). Then any solution *of k-go* of the equation can be written down in a look

$$y_k(x_k;\lambda) = C_1^k(\lambda;\vec{p}) u_k(x_k;\lambda) + C_2^k(\lambda;\vec{p}) v_k(x_k;\lambda),\ k = \overline{1,P}. \tag{9}$$

For reduction of record we will consider further $y_k(x_k) = C_1^k u_k(x_k) + C_2^k v_k(x_k)$.

Let's substitute fundamental system of decisions (9) in conditions (5)-(7), we will receive system from 2P of the equations:

$$C_1^k u_k'(l_k) + C_2^k v_k'(l_k) + (p_{k1} + \lambda p_{k2})(C_1^k u_k(l_k) + C_2^k v_k(l_k)) = 0;\ k = \overline{1,N};$$

$$C_1^1 u_1(0) + C_2^1 v_1(0) - C_1^i u_i(0) - C_2^i v_i(0) = 0;\ i = \overline{2, D_1};$$

$$C_1^1 u_1(0) + C_2^1 v_1(0) - C_1^{N+1} u_{N+1}(0) - C_2^{N+1} v_{N+1}(0) = 0;$$

$$C_1^{D_1+..+D_{j-1}+1}u_{D_1+..+D_{j-1}+1}(0)+C_2^{D_1+..+D_{j-1}+1}v_{D_1+..+D_{j-1}+1}(0)-C_1^i u_i(0)-C_2^i v_i(0)=0;$$

$$i=\overline{D_1+...+D_{j-1}+2, D_1+...+D_j};\ \ j=\overline{2,M};$$

$$C_1^{D_1+..+D_{j-1}+1}u_{D_1+..+D_{j-1}+1}(0)+C_2^{D_1+..+D_{j-1}+1}v_{D_1+..+D_{j-1}+1}(0)-C_1^{N+j}u_{N+j}(0)-C_2^{N+j}v_{N+j}(0)=0;$$

$$j=\overline{2,M-1};$$

$$C_1^{D_1+..+D_{j-1}+1}u_{D_1+..+D_{j-1}+1}(0)+C_2^{D_1+..+D_{j-1}+1}v_{D_1+..+D_{j-1}+1}(0)-C_1^{N+j-1}u_{N+j-1}(l_{N+j-1})-$$

$$-C_2^{N+j-1}v_{N+j-1}(l_{N+j-1})=0;\ j=\overline{2,M};$$

$$\sum_{i=1}^{D_1}(C_1^i u_i'(0)+C_2^i v_i'(0))+C_1^{N+1}u_{N+1}'(0)+C_2^{N+1}v_{N+1}'(0)=0;$$

$$\sum_{i=D_1+..+D_{j-1}+1}^{D_1+..+D_j}(\ C_1^i u_i'(0)+C_2^i v_i'(0))+C_1^{N+j}u_{N+j}'(0)+C_2^{N+j}v_{N+j}'(0)-C_1^{N+j-1}u_{N+j-1}'(l_{N+j-1})-$$

$$-C_2^{N+j-1}v_{N+j-1}'(l_{N+j-1})=0;\ j=\overline{2,M-1};$$

$$\sum_{i=D_1+..+D_{M-1}+1}^{D_1+..+D_M}(\ C_1^i u_i'(0)+C_2^i v_i'(0))-C_1^P u_P'(l_P)-C_2^P v_P'(l_P)=0.$$

This system of the equations can be presented in the form of the vector-matrix equation

$$B(\lambda,\vec{p})\vec{C}=[B_0(\lambda)+\sum_{k=1}^{N}(p_{k1}B_{k1}(\lambda)+p_{k2}B_{k2}(\lambda))]\vec{C}=0, \qquad (10)$$ where

$\vec{C}=(C_1^1(\lambda,\vec{p});C_2^1(\lambda,\vec{p});...;C_1^P(\lambda,\vec{p});C_2^P(\lambda,\vec{p})-$ vector of dimension 2P,

$$(B_{k1})_{ij}(\lambda)=\begin{cases} u_k(l_k), i=k, j=2k-1; \\ v_k(l_k), i=k, j=2k; \\ 0, иначе; \end{cases}$$

$$B_{k2}(\lambda)=\lambda B_{k1}(\lambda);\qquad k=\overline{1,P}.$$

Let's formulate a multiple parameter return spectral task (MPOSZ) for the operator $B(\lambda,\vec{p})$.

It is required to find possible values of a vector $\vec{p}=(p_{11},...,p_{N1},p_{12},...,p_{N2})$ coefficients of boundary conditions (5) at which beforehand the set numbers *λ1, λ2, ..., λ2N* are own values of the operator $B(\lambda,\vec{p})$. At the same time a set of numbers *λ1, λ2, ..., λ2N* we will call spectral data and to designate $\vec{\lambda}$.

The solution of the return spectral task is consolidated to the decision of system of the equations

$$B(\lambda_j,\vec{p})\vec{C}(\lambda_j,\vec{p})=[B_0(\lambda_j)+\sum_{k=1}^{N}(p_{k1}B_{k1}(\lambda_j)+p_{k2}B_{k2}(\lambda_j)]\vec{C}(\lambda_j,\vec{p})=0,$$

$$j=\overline{1,2N}. \qquad (11)$$

Let's designate $b(\lambda,\vec{p})=\det[B(\lambda,\vec{p})]$, then the solution of MPOSZ is equivalent to the decision of system from 2N of the equations

$$b(\lambda_j,\vec{p})=0,\ j=\overline{1,2N}. \qquad (12)$$

Direct research of existence of decisions, their quantities and finding of all decisions are generally difficult to system (12) as the polynomial equations from the pj1 and pj2 variables, $j=\overline{1,N}$, have a difficult appearance.

Methods of the theory of indignations prove the theorem of monotonous dependence own values from parameters of boundary conditions. Let $\lambda=\lambda(\vec{p})=\lambda(p_1,...,p_{2N})$ – any own value of a regional task (4)-(7). Then $\frac{\partial\lambda(\vec{p})}{\partial p_{ki}}>0,$ $i$ = 1,2, in the field of *pk1*> 0 and *pk2* <0, $k=\overline{1,N}$.

Let's consider numerical creation of all solutions of a multiple parameter return spectral task in finite-dimensional Euclidean space *of En*.

Let's enter a cone of vectors $K=\{\vec{x}\in R^m : x_k\geq 0 \text{ or } x_k\leq 0\}$ and conical piece $[\vec{a},\vec{b}]_K=\{\vec{x}\in R^m : a_k\leq x_k\leq b_k\}$.

Let's designate through $\mu_1(\vec{p}),\mu_2(\vec{p}),...,\mu_m(\vec{p})$ own values of the operator $B(\lambda,\vec{p})$ at some value of a vector $\vec{p}\in R^m$.

Statement of MPOSZ for the operator $B(\lambda,\vec{p})$: to find such value of a vector $\vec{p}\in R^m$ from the set conical piece $[\vec{a},\vec{b}]_K$, that $\mu_1(\vec{p}),\mu_2(\vec{p}),...,\mu_m(\vec{p})$ respectively were equal beforehand to the set numbers *λ1, λ2..., λm* – to spectral data of a task.

Let's consider function $\vec{\mu}(\vec{p})=(\mu_1(\vec{p}),\mu_2(\vec{p}),...,\mu_m(\vec{p}))$, which possesses properties:

1) $\vec{\mu}:K\to K,\ \vec{\mu}(\vec{p})\in C^1(K);$

2) $\vec{\mu}(\vec{p})$ – monotonous, i.e. $\frac{\partial\mu_j(\vec{p})}{\partial p_k}\neq 0$, $k=\overline{1,m}$, $j=\overline{1,m}$.

Area of not existence of solutions of MPOSZ for the set spectral data $\vec{\lambda}=(\lambda_1,\lambda_2,...,\lambda_m)\in R^m$ let's call area in which there is no vector $\vec{p}\in R^m$ it that $\vec{\mu}(\vec{p})=\vec{\lambda}$.

Let's formulate sufficient conditions for area of not existence of solutions of MPOSZ. If $\vec{\lambda}\notin[\vec{\mu}(\vec{a}),\vec{\mu}(\vec{b})]_K$, then conical piece $[\vec{a},\vec{b}]_K$ is area of not existence for MPOSZ with spectral data $\vec{\lambda}\in R^m$.

Let's define a conical piece $[\vec{a},\vec{b}]_K$, in which we will look for solutions of MPOSZ. Let's take a point $\vec{c}\in[\vec{a},\vec{b}]_K$, which will be the center of a conical piece and to lie on the monotonous curve connecting points $\vec{a}$ and $\vec{b}$. Three points (tops $\vec{a}$, $\vec{b}$ and center $\vec{c}$) formed two conical pieces $[\vec{a},\vec{c}]_K$ and $[\vec{c},\vec{b}]_K$, which are subareas of a conical piece $[\vec{a},\vec{b}]_K$. As at *a m-dimensional* conical piece *2m* tops, it is possible to create *2m* subareas $[\vec{a},\vec{b}]_K^{(i)}$, $i=\overline{1,2^m}$, such that $\bigcap_{i=1}^{2^m}[\vec{a},\vec{b}]_K^{(i)}=\vec{c}$ and $\bigcup_{i=1}^{2^m}[\vec{a},\vec{b}]_K^{(i)}=[\vec{a},\vec{b}]_K$. Further in each conical piece $[\vec{a},\vec{b}]_K^{(i)}$, $i=\overline{1,2^m}$ let's check performance sufficient conditions. If the condition is satisfied, the considered conical piece does not contain solutions of MPOSZ if the

condition is satisfied, according to the above described scheme we carry out its splitting and we pass to the following conical piece. Having continued this procedure final number of times, we will receive localization of areas of existence of the decision with any necessary accuracy. Applying an iterative method to each localized area of existence, it is possible to specify solutions of an objective to the required accuracy.

**Type of the realizing COMPUTER**: x64 compatible (when using the sootvestvushchy compiler use in x86 compatible systems) from 512 MB of random access memory is possible (the solution of problems of big dimension requires not less than 4 GB of random access memory).

**Programming language:** MATLAB (R2014a version)

**Operating system:** Windows XP (64 digit) and above.

**Volume of the computer program:** 50 CBs

## ADVERTISING AND TECHNICAL DESCRIPTION "The Program for Modelling of Process of Adaptation in an Antenna Lattice in Stationary Conditions"

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***GRNTI** 28.17.19, 29.03.77, 29.35.19*

**1. Functional purpose of the program, area of its application, its restriction**

1.1 Purpose of the program

The program for modeling of process of adaptation in an antenna lattice in stationary conditions is intended for modeling of process of adaptation in an antenna lattice by creation of the directional pattern of an adaptive antenna lattice, depending on the direction of sources of hindrances and a useful signal. The program allows to carry out the analysis of influence of power and the direction of arrival of hindrances on the directional pattern.

Stationary conditions of an alarm and interfering situation are understood as independence of angular coordinates of sources of signals and hindrances of time, i.e. location of satellite stations and relay satellites, and also stations of directors of hindrances do not change in space and time.

In a basis of the program the recurrent algorithm of adaptation realizing a method of adaptive suppression of hindrances an antenna lattice of systems of space communication in stationary conditions of an alarm and interfering situation on criterion the relation a signal / (a hindrance + noise) in the established and transitional modes is put.

The program is realized in the environment of Mathcad 14.

1.2 Description of work

Work of the program for modeling of process of adaptation in an antenna lattice in stationary conditions is carried out due to the recurrent algorithm of adaptation realizing a method of adaptive suppression of hindrances an antenna lattice of systems of space communication in stationary conditions of an alarm and interfering situation on criterion the relation a signal / (a hindrance + noise). In other words – in the directions of arrival of sources of hindrances in the directional pattern (DP) of the adaptive antenna lattice (AAL) "zero" are formed.

Work of the program begins with start of the file of the Adaptation Process Modelling program.

In figure 1 the tab of the program by means of which basic data on sources of a useful signal and hindrances are entered is presented.

As basic data input of the following parameters is provided in the program:

direction of arrival of a useful signal and sources of hindrances;
relative power of a useful signal and sources of hindrances;
number of interfering signals;
number of radiators of AAR;
distance between radiators;
number of iterations of transition process;
feedback coefficient.

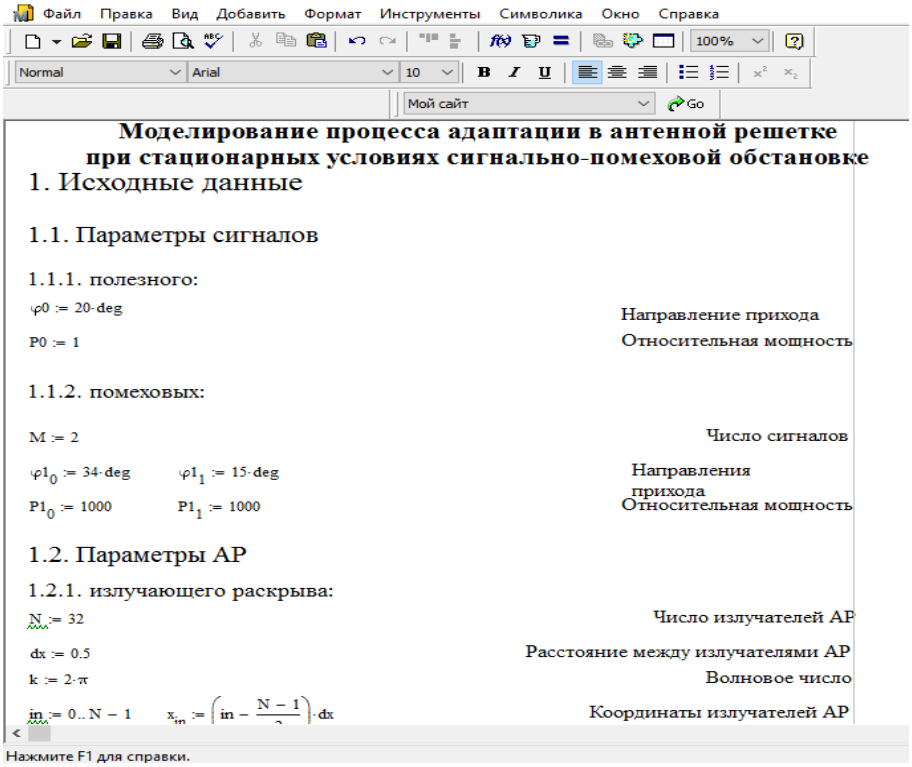



Figure 1 – A program tab with basic data

Time of adaptation and transition in set the mode will depend on number of interfering signals, coefficient of feedback, number of iterations of transition process and the relation of power of a useful signal to the power of sources of hindrances.

At reduction of value of coefficient of feedback – γ, providing stability and sufficient speed of convergence of algorithm, the quantity of steps grows, and accuracy increases. However, the choice too small value γ leads to the fact that transitional process does not meet, and too big – to its divergence.

Suppression of hindrances in AAR is carried out by calculation of the vector of weight coefficients (VWC) *of W* providing formation of zero DN in the direction of sources of hindrances. A quality indicator for evaluation of the work of the diagrammoobrazuyushchy scheme we use criterion of a maximum of the relation of power of a signal to the sum of capacities of noise and a hindrance (OSPSh) which can be presented in the following form:

$$Q = \frac{W^T R_{ss} W^*}{W^T R_{nn} W^*}, \qquad 1)$$

where *Rss* –a kovariatsionny matrix of a useful signal;
*Rnn* –a kovariatsionny matrix of own noise and external hindrances;
$W$ –a vector of weight coefficients in channels of spatial processing;
$*$ –symbol of operations of complex interface;
$T$ –transposing sign.

The vector of weight coefficients, optimum by criterion of a maximum of OSShP, can be found in a look:

$$W_{\text{опт}} = R_{nn}^{-1} S_0^{\ *}, \qquad 2)$$

where *S0* –the operating vector which elements are the complex amplitudes of signals of elements of an antenna lattice providing formation of the main maximum of DN in the direction of a useful signal.

In these conditions the matrix differential equation for determination of adaptive weight coefficients in systems of continuous time has an appearance:

$$\tau \frac{\mathrm{d}W}{\mathrm{d}t} + [E + \gamma R_{\text{nn}}]W = S_0^{\ *}, \qquad 3)$$

where*E*–a single matrix;

τ–time constant;

γ–characterizes coefficient of transfer of a contour of management and it is identical to all contours.

In a discrete form the algorithm (3) can be presented by the following recurrence relation:

$$W(k+1) = [E + \gamma R_{nn}]W(k) + \Delta W(k), \qquad 4)$$

where *W* (*k*+1)–VVK on (*k*+1) - m an estimation step;

*W(k)* –VVK values on *k-m* a step;

ΔW(k) –the vector which is characterized by the normal law of distribution with a zero average and dispersion σ2.

Parameters γ and σ2 have to be chosen so that were provided both stability, and sufficient speed of convergence of algorithm. It should be noted that when performing $W_{\text{опт}} = R_{nn}^{-1} S_0^*$ OSPSh reaches the maximum value when $Q = W^T R_{nn} W$, since the matrix *of Rnn* is Hermite, i.e. $(R_{nn}^{-1*})^m = R_{nn}^{-1}$.

In the absence of a useful signal the considered algorithm to within a constant multiplier coincides with algorithm by criterion of a minimum of a mean square mistake (SKO). At the same time the choice of the operating vector $S_0^*$ in algorithm by criterion of a maximum of OSPSh it is equivalent to the choice of a vector of mutual correlation accepted and basic signals $R_{xd}$ in algorithm by criterion of a minimum of SKO under a condition $R_{xd} = S_0^*$, that allows to receive identical values of optimum VVK for two algorithms.

Example of results of modeling:

Modeling of the stationary, transitional and established modes of functioning of the received algorithm was carried out on the example of ekvidistantny linear AAR with uniform amplitude distribution in which radiators are located with the step equal to a half of wavelength. Two situations at which the useful signal arrives from the direction φ = 200 with a relative power *of P0* = 1 were considered and 2 hindrances from the directions φ1 = 150, φ2 = 340 influence:

1. Linear AAR from 32 elements, the power of each of hindrances exceeds power level of a useful signal by 1000 times (*RP1* = 1000).

2. Linear AAR from 32 elements, the power of the first hindrance exceeded the power of a useful signal by 1000 times, and the power of the second hindrance – by 100 times (*RP2* = 100).

Schedules of the transitional, stationary and established modes of functioning of AAR, and also graphics of change of directional patterns of an antenna lattice are presented to process of adaptation in figures 2-5 respectively to each imitating situation.

The algorithm works as follows. Is able to *t0* timepoint when there is no useful signal and hindrances, AAR has the initial the amplitude-phase distribution (APD) which is characterized by existence only of internal noise of elements of an antenna lattice. As about the direction of arrival of a useful signal there is aprioristic information, the main petal of DN is ready for this direction (the stationary mode of functioning of AAR).

At approach of a timepoint *of t0* with arrival of a useful signal of AAR it is ready for a useful signal, and OSSh (the relation of power of a useful signal to internal noise) is equal for 32 to element AAR $Q = W^T R_{nn} W = 30{,}343\ \partial Б$ (figure 2).

In a timepoint *of t1* of a hindrance influence on lateral petals of DN, as a result of this OSPSh decreases since capacities of hindrances are very big. The measuring instrument of level of a useful signal at the exit of AAR registers reduction of OSPSh and gives a signal of management for start of the mode of adaptation.

From the beginning of functioning of algorithm of adaptation there comes transitional process during which "zero" DN in the direction of influence of hindrances with preservation of the direction of the main petal on a source of a useful signal are formed (figures 4, 5). Upon termination of transition process (*t2* time) there comes the set mode when the main petal of DN is directed to a useful signal, and in the direction of hindrances sufficient failures of DN for providing optimum OSPSh (figures 4g, 5 of) are created.

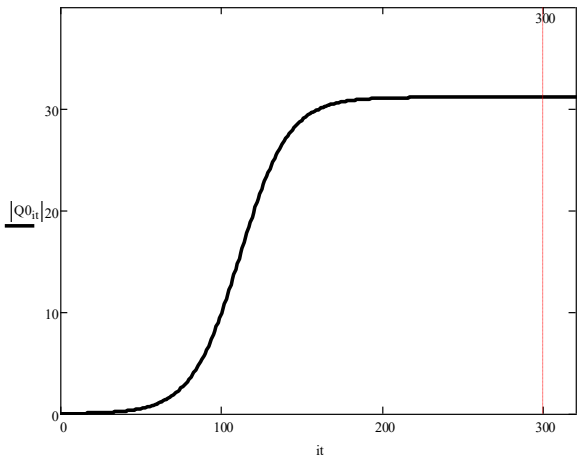



Figure 2 – Transitional process at *RP1/P0=1000* and *RP2/P0=1000*: for 32 element AAR

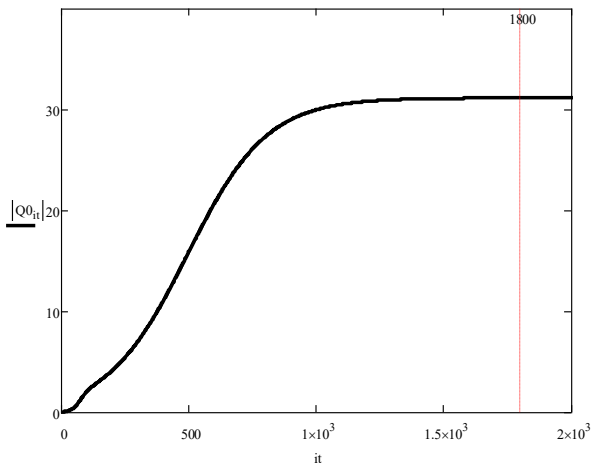



Figure 3 – Transitional process at *RP1/P0=1000* and *RP2/R0=100:dlya* 32 element AAR

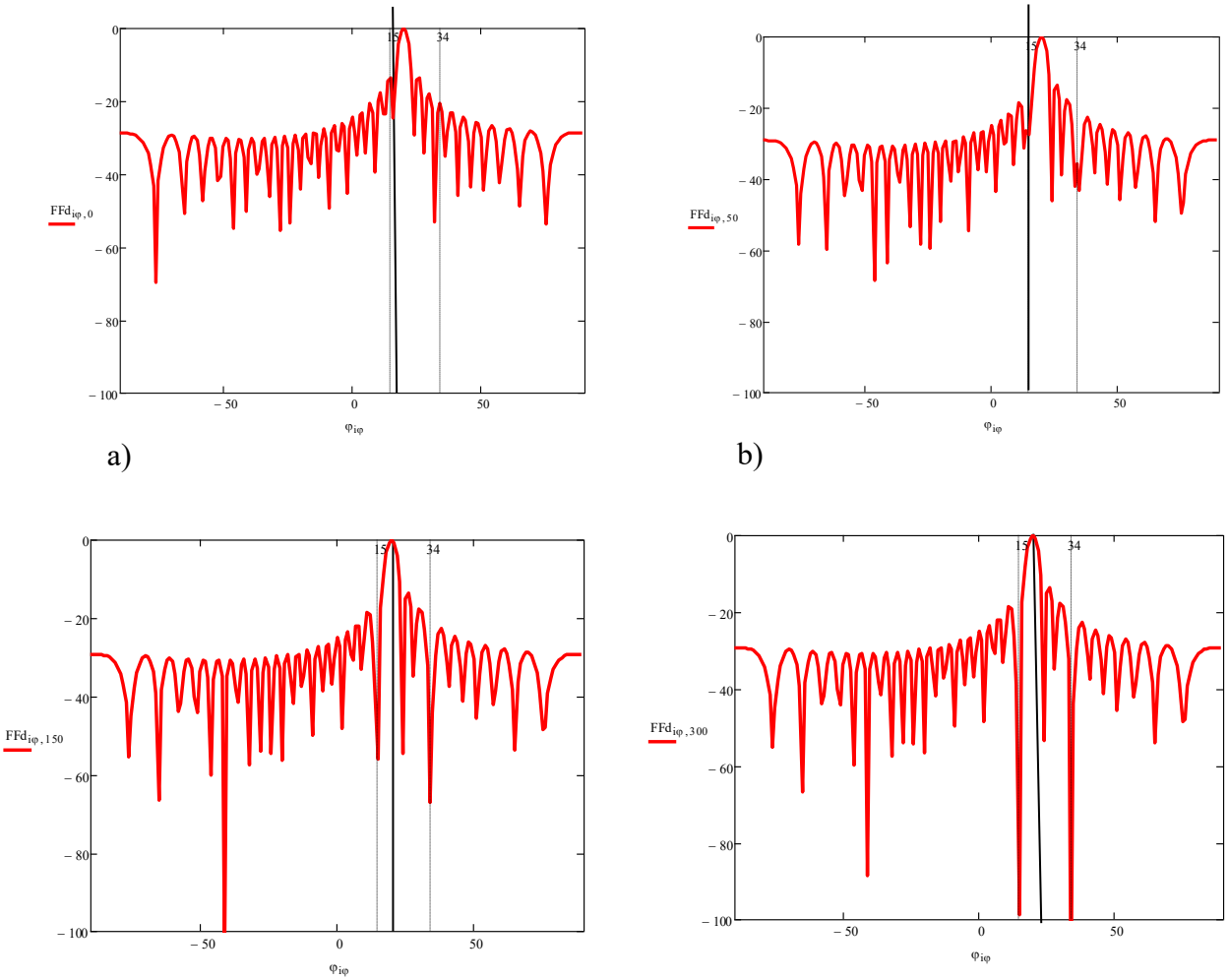
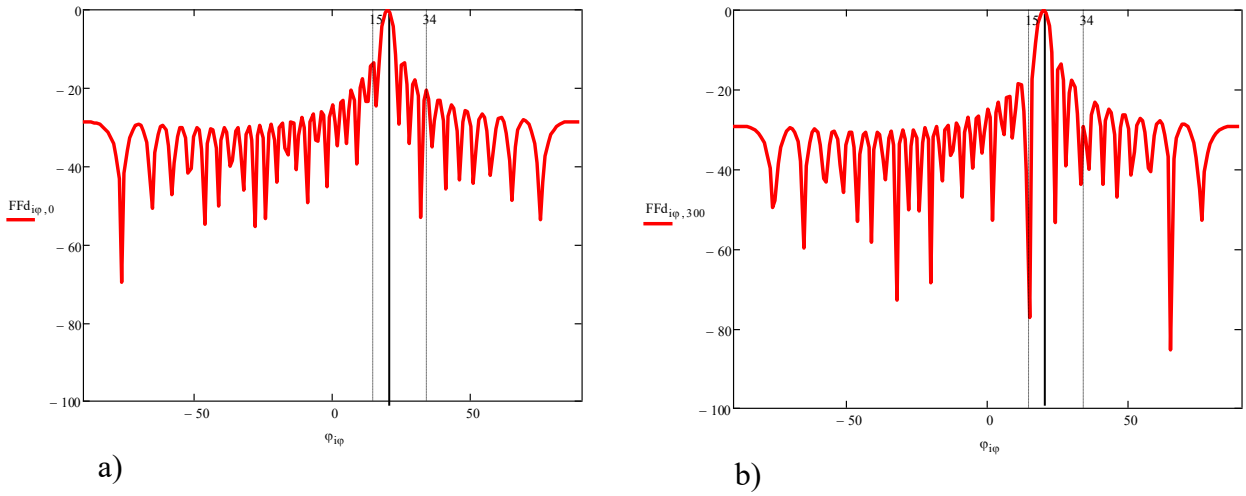
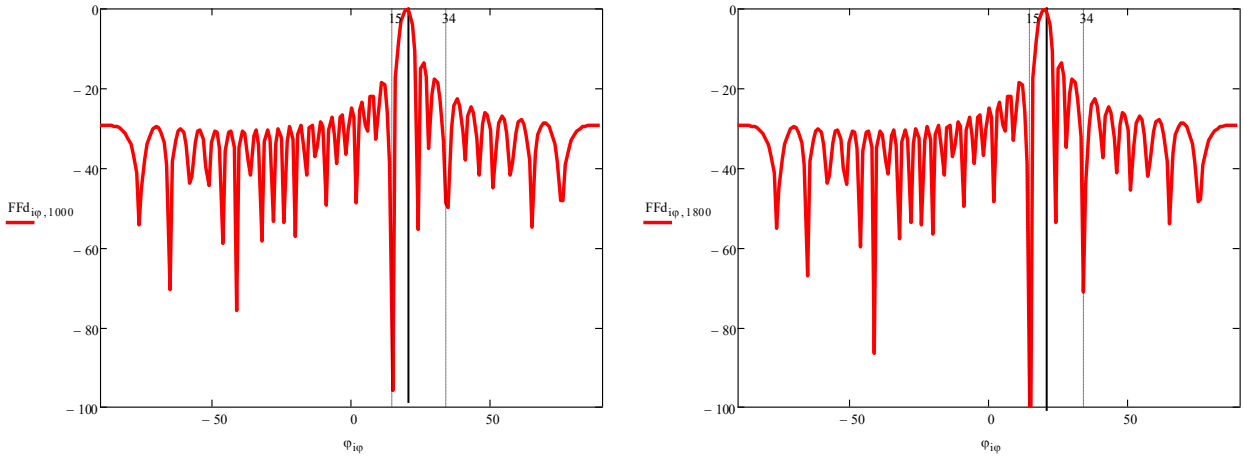



Figure 4 – Change of DN 32 element AAR in the course of adaptation (RP1/R0=1000 and RP2/R0=1000): and – the stationary mode; – on the 50th step; in – on the 150th step; – the set mode






c) d)

Figure 5 – Change of DN 32 element AAR in the course of adaptation (RP1/R0=1000 and RP2/R0=100): and – the stationary mode; – on the 300th step; in – on the 1000th step; – the set mode

1.3 Program scope

The developed program allows to simulate process of adaptation in AAR, to carry out the analysis of influence of hindrances and an arrangement of the AAR elements on the directional pattern. The submitted program is developed for application in the field of development of design of AAR.

1.4 Restrictions of use of the program

This program is calculated:

for work under management of an operating system of Microsoft Windows family;

on the user with basic skills of use of the software.

**2. Technical specification on the program**

2.1 Structure of the software product

In a basis of the program the recurrent algorithm of adaptation realizing a method of adaptive suppression of hindrances an antenna lattice of systems of space communication in stationary conditions of an alarm and interfering situation on criterion the relation a signal / (a hindrance + noise) in the established and transitional modes is put. This algorithm is presented in figure 6.

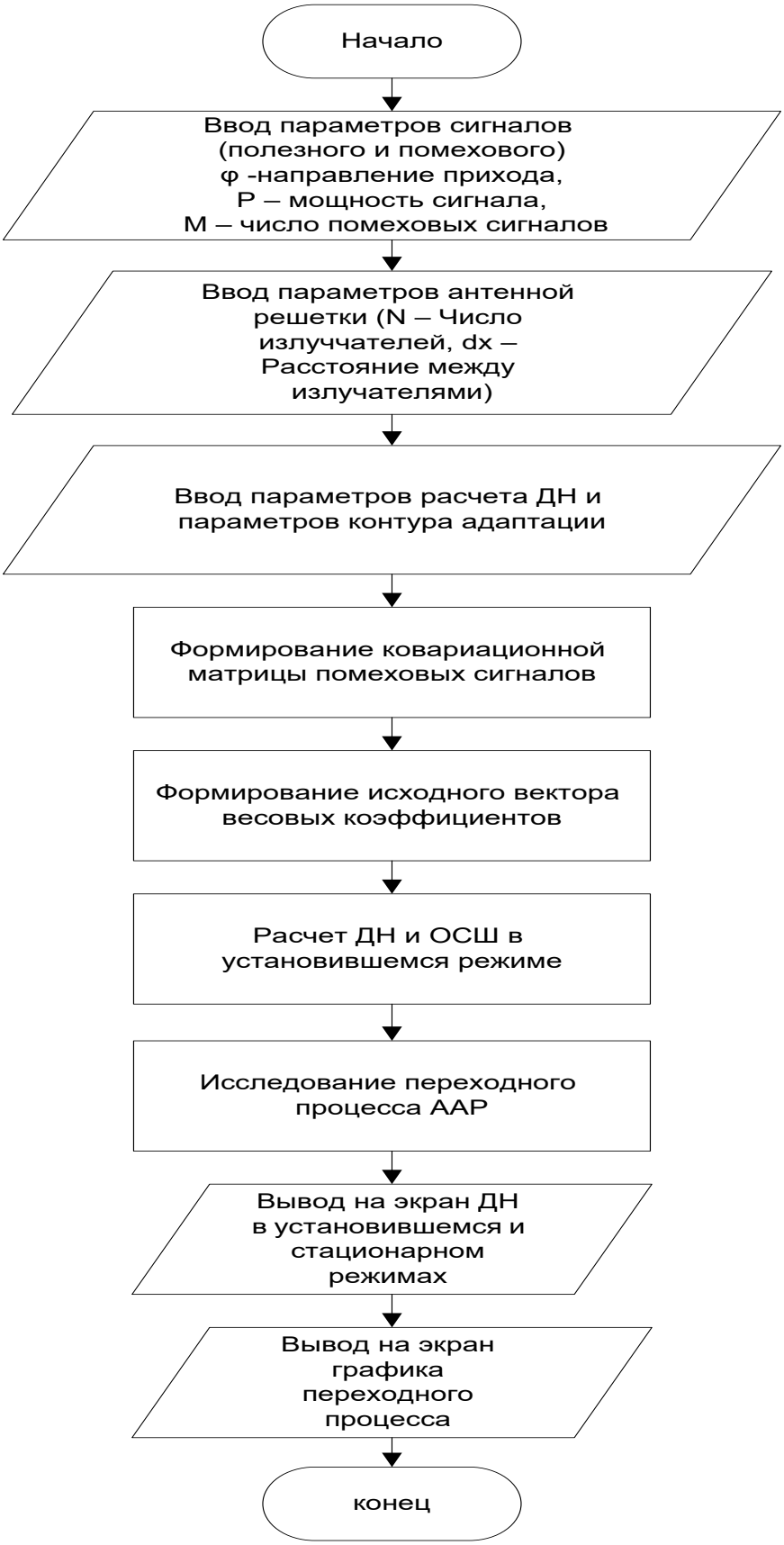



Figure 6 – Algorithm of work of the program

2.2 The applied software

For implementation of the developed program the environment of mathematical calculations Mathcad 14 is used.

2.3 Hardware requirements

For normal functioning of the program the following requirements to hardware – program part of a workplace of the user are imposed:

1. minimum:

– the Intel or AMD Single Core processor with a frequency not lower than 1 GHz;
– random access memory with a capacity not less than 1 GB;
– the integrated video adapter;
– an empty seat on the system section of the hard drive 100 Mb;
– the preset software – Mathcad;
– operating system of Microsoft Windows XP.

2. recommended:

– the Intel or AMD Dual Core processor with a frequency of 2 GHz;
– random access memory with a capacity of 4 Gb;
– the integrated video adapter;
– an empty seat on the system section of the hard drive 100 Mb;
– the preset software – Mathcad;
– Windows 10 operating system.

**3. Special conditions of application**

The program is compatible to any versions an operating system of Microsoft Windows family and the software – Mathcad.

**4. Conditions of transfer of program documentation or its sale**

The program of modeling of process of adaptation in an antenna lattice in stationary conditions is developed by staff of Military academy of communication.

Transfer of the software product to the third parties, and also educational institutions, institutions of other ministries and departments is carried out on a contractual basis and is solved directly with authors, at their written consent.

Concerning acquisition and sale of the software product to contact the address:

194064, St. Petersburg, Tikhoretsky Avenue of 3, FGCVOOU WAUGH "Military academy of communication of Marshall of the Soviet Union S. M. Budenny" Ministries of Defence of the Russian Federation.

Phone: 8 (981) 130-63-98

E-mail: dimas.portnoy@inbox.ru.

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Alyoshin Stepan Leonidovich;
Candidate of Technical Sciences Tkachyov Dmitry Fedorovich;
Pedan Alexey Viktorovich;
Candidate of Technical Sciences Shtreker Evgeny Nikolaevich;
Candidate of Technical Sciences Chernyshov Artem Gennadevich;
Ladyka Maxim Borisovich.

## ADVERTISING AND TECHNICAL DESCRIPTION "Network edition (newspaper) "Of the chronicle of the Joint fund of electronic resources "Science and education" No. 08 (87) August, 2016"

*Federal public budgetary scientific institution "Institute of Management of Formation of the Russian Academy of Education"*

*Galkina A.I., Burnasheva E.A., Grishan I.A.*

***UDC** 37*

***GRNTI** 14.01.11*

**1. Functional purpose of a product, scope, its restrictions**

The network edition (newspaper) "Chronicles of the Joint fund of the electronic resources "Science and education" - an electronic public resource which is especially important for preventive protection of author's developments of authors-individuals and groups of authors.

This network edition not only affirms the declared copyright of ideas, methods, techniques and other developments, but also notifies the scientific and pedagogical public of the country on results of intellectual activity in the field of initiative works of certain natural persons and on-stage performance groups.

The analysis of database OFERNIO shows that initiative developments make ~ 30% of all number of the registered works that confirms the thesis about creativity, talent, sharpness and enterprise of Russians.

These developments support more than 20 directions of science.

This number of the network edition contains information on the developments registered in the Joint fund of the electronic resources "Science and education" in July, 2016. Number included information on developments of 99 authors:

Asadullina L.F.
2. Aleshin P.N.
3. Akchulpanova R.T.
4. Arhipova O.V.
5. Bobkova E.YU.
6. Burnasheva E.A.
7. Bulycheva S.V.
8. Blaginin S.I.
9. Burcev A.G.
10. Butov G.M.
11. Boltachev EH.F.
12. Bojko N.N.
13. Burcev A.G.
14. Vasil'ev A.YU.
15. Galkina A.I.
16. Grishan I.A.
17. Gvozdyuk V.N.
18. Goncharova E.V.
19. Gruzinceva N.A.
20. Gusev B.N.
21. Galimov EH.R.
22. Gizatullina K.H.
23. Gabidullina G.R.
24. Grishin A.A.
25. Druzhinin M.S.
26. Dudnikov V.YU.
27. Egorova A.O.
28. Zamaraeva Z.P.
29. Zajnetdinov A.SH.
30. Zamkov E.T.
31. Ivankina O.M.
32. Ivancova G.A.
33. Ibragimova G.M.
34. Ishmuhametov YA.M.
35. Ishmuhametov R.A.
36. Ivanova E.A.
37. Kaliev I.A.
38. Kosyh E.S.
39. Kozlova D.A.
40. Kulikova M.A.
41. Kusenkova A.A.
42. Kuznecov V.P.
43. Kuruninoj G.M.
44. Krekaleva T.V.
45. Kejbal N.A.
46. Kaplya V.I.
47. Krivyh YU.S.
48. Korneev S.V.
49. Kuznecova V.N.
50. Luk'yanov G.I.
51. Mindorov N.I.
52. Myslyaeva N.S.
53. Mullagil'dina G.R.
54. Manyashin A.V.
55. Medvedeva L.N.
56. Moiseev YU.I.
57. Martynova YU.V.
58. Mochalin S.M.
59. Neustroev S.S.
60. Nafikov V.R.
61. Nafikova A.R.
62. Nafikova A.I.
63. Predybajlo V.A.
64. Palij A.V.
65. Popov A.V.
66. Popov D.V.
67. Romashkina T.V.
68. Reutov S.I.
69. Rasskazova A.A.
70. Remizov P.N.,
71. Silaev A.V.
72. Sokolova N.A.

73. Sulyaev R.S.
74. Sabitova G.S.
75. Sabitova YU.K.
76. Saleev EH.R.
77. Sokolov A.N.
78. Timofeeva R.I.
79. Tyukina L.V.
80. Usmanova R.M.,
81. Umetbaeva YU.I.
82. Filippova T.A.
83. Filipenko E.V.
84. Fedorov I.V.
85. Fatyhova A.L.
86. Hasanova S.L.
87. Husainov I.G.
88. Hlobzheva I.N.
89. Hamitov R.N.
90. Cybina A.S.
91. CHiganova N.V.
92. CHernova EH.R.
93. CHerkasova A.V.
94. SHirokova S.YU.
95. SHabanova V.P.
96. SHergeng N.A.,
97. YAmshchikova S.L.
98. YApryncev E.V.
99. YArmovich YA.V.

and following organizations developers:

1. Sterlitamak branch VO Bashkirsky Public Educational Institution state university;
2. FGBOOU WAUGH "The Nizhny Novgorod state pedagogical university of Kozma Minin (Mininsky university)";
3. FGAOOU WAUGH "The southern federal university";
4. FGBOOU WAUGH "Magnitogorsk state technical university of G. I. Nosov";
5. The Volga polytechnical institute (branch) of FGBOU IN "The Volgograd state technical university";
6. FGBOOU WAUGH "Omsk state technical university";
7. FGBNU "Institute of management of formation of the Russian Academy of Education".

In developments of higher education institutions remote courses in support of training in various demanded specialties and for the first time – training and working programs are mainly presented.

Among works of authors-individuals and groups of authors the special attention is drawn "By algorithm of planning of cargo delivery by the principles of JIT and JIS in a microsystem", authors: Mochalin S.M., Tyukina L.V. which is focused on planning of delivery of freight on the basis of logistic concepts "precisely in time" and in "a certain sequence" by the motor transport in city conditions. The algorithm is focused on works of the motor transport in a microsystem. The algorithm allows to construct the operating plan of execution of operation for all participants of process of delivery of freight under the set delivery terms and restrictions, through streamlining of execution of tasks in time and effective use of necessary resources; to determine an opportunity (or its absence) cargo deliveries by the principle "precisely in time", "precisely in sequence"; to improve planning of activity of freight motor transportation transportation in direct system of cargo delivery. A result of this algorithm is the made schedule separately for the consignor, the consignee, a cargo carrier and the dispatcher.

**2. The used technical means**

System requirements: IBM PC, Intel, 500 MHz; 524 Mb RAM; an empty seat on HDD of 524288 KB; Windows XP above; mouse. Development volume – 654 KB.

**3. Special conditions and requirements of organizational, technical and technological character**

The network edition is intended for professorial community of the country and 92 countries of the world. Use in global networks is possible. Internet access is necessary for work with the network edition.

**4. Conditions of transfer of documentation or its sale**

The network edition is in free access on www.ofernio.ru, however, all rights of the organization developer – to FGBN IUO RAO are protected by publication on the www.ofernio.ru portal and placement in NEB on www.elibrary.ru (RINTs).

**List of references:**

1. Galkina A.I., Grishan I.A. "Electronic information resource "Information portal OFERNIO"//Chronicles of the joint fund of the electronic Science and education resources. 2010. T. 1№ 4(11) of Page 94;

2. Galkina A.I., Grishan I.A. "Designer of requests of database OFERNIO"//Chronicles of the joint fund of the electronic Science and education resources. 2010. T. 1 No. 2(9) of Page 11;

3. E.N., Bobkov E.Yu. Sheremetyevo., Galkina A.I. and others" Actual problems of science, economy and formation of the 21st century: Materials of the International scientific and practical conference on March 5 – on September 25, 2010"//Chronicles of the joint fund of the electronic Science and education resources. 2010. T. 1 No. 9 (16) of Page 58;

4. Galkina A.I., Grishan I.A., Bobkova E.Yu., Burnasheva E.A., Komarova M. V. "About the results of intellectual activity (RIA) on the basis of wide use of information and communication technologies (on the example of materials OFERNIO for 2014)"//Chronicles of

the joint fund of the electronic Science and education resources. 2015. T. 1 No. 01 (68) of Page 14;

5. Neustroyev S.S., Predybaylo V.A., Galkina A.I., Bobkova E.Yu., Grishan I.A., Komarova M. V., Burnashev of E.A Multiparadigmalnye approaches in domestic science and education: the review of relevant sources from a collection of electronic editions OFERNIO for 2006-2015"//Chronicles of the joint fund of the electronic Science and education resources. 2015. T. 1 No. 10 (77) of Page 22.

## ADVERTISING AND TECHNICAL DESCRIPTION "Control Algorithm of Financing of Works on Recultivation"

*Frank E.YA., Petrova T.V.*

***UDC** 5*
***GRNTI** 82.05.09, 06.71.63*

**1. Functional purpose of a product, scope, its restrictions**

**Functional purpose:** the algorithm is intended for satisfaction of requirements of social and economic system of subsurface use, namely for providing with financial means recultivation of the broken land plots which now, in the absence of financing of these works by the enterprises subsoil users in view of deficiency at them financial means at a stage of liquidation of the enterprise, pass into the category of the fulfilled lands.

**Scope** of a control algorithm of financing of works on recultivation:

at management of the financial streams intended for performance of technical and biological stages of recultivation of the land plots broken by the coal-mining enterprises at the regional level;

when forming financial streams of the enterprises subsoil users intended for recultivation of the sites broken by them with the minimum decrease in profitability of production of the enterprise;

during the training of students of the corresponding specialties and professional development of experts in the field of management social ekologo - economic systems.

**The scope** of a control algorithm of financing of works on recultivation **is limited**:

impossibility of its realization at essential negative change of financial results of work of the enterprises-nedroplzovateley;

period of work of the enterprises subsoil users with design capacity.

**2. The used technical means**

The recommended requirements to hardware and to the software for installation and functioning of a complex of programs:

– i3-2100 Intel (R) Core (TM) processor;
– random access memory of 4 Gb;
– empty seat on the hard drive 3 Gb;
– operating system of Microsoft Windows 7;
– tabular Microsoft Excel 2010 processor.

**3. Special conditions and requirements of organizational, technical and technological character**

The algorithm is based on use of the regional fund of recultivation of lands (RFRL) as a basic funding mechanism for works on recultivation. RFRZ is created in structure of Management of Rosprirodnadzor of the region.

The centralized fund is formed by means of accumulation of periodic assignments of funds of the enterprises subsoil users during the period of their work with design capacity (fig. 1).

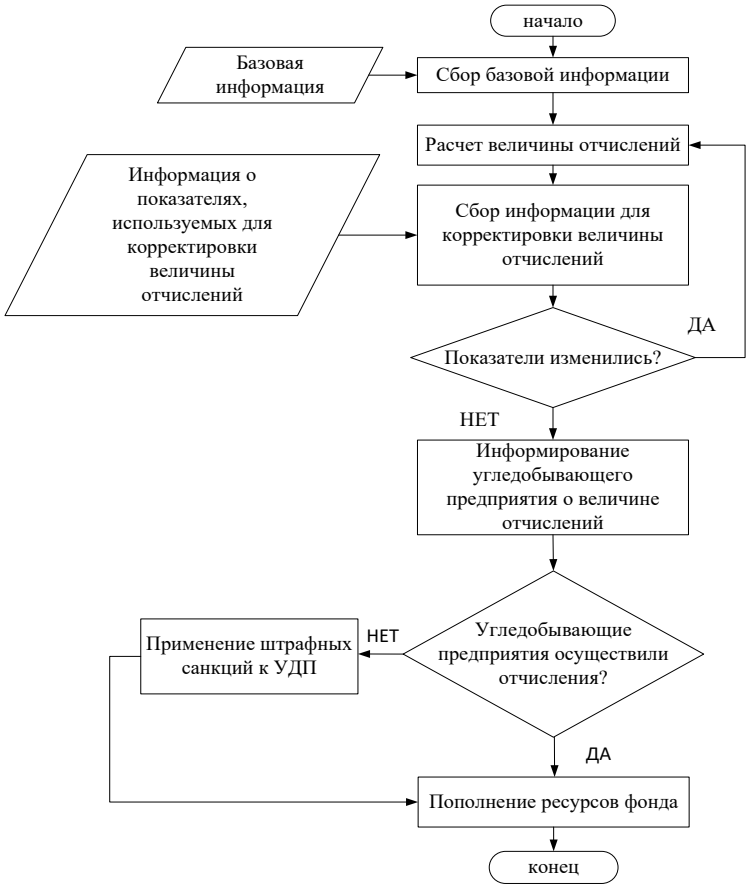



Figure 1 – Algorithm of accumulation of financial resources in a control system of works on recultivation

According to the basic principles of environmental management (to availability at a price and justice) the coal-mining enterprises have to list all financial resource necessary for recultivation of the sites broken by it. Calculation of size of assignments is defined by the relation of budget costs of recultivation of each concrete site to service life of work of the enterprise with its design capacity on this site. Therefore, annual assignments will make (branch 1):

$$Z_{\hat{o}i} = \frac{Ce_i}{T_i}, \qquad 1)$$

where $Z_{\hat{o}i}$ – the size of annual assignments of a resource by the coal-mining enterprise in regional fund, thousand rubles;

$T_i$ – term of work of the enterprise with design capacity, years;

$Ce_i$ – budget costs of the enterprise of recultivation, thousand rubles.

The algorithm assumes adjustment of size of a stream of assignments at change of the following indicators (2):

$$S = \{INF, NR, CT\grave{I}, \tilde{N}TR, \tilde{N}N, Q\}, \qquad 2)$$

where $INF$ – general index of inflation; $NR$ – index of inflation of the prices of resources; $CTM$ – change in costs of recultivation as a result of development of science and equipment in the direction of creation of technical means and improvement of mountain technologies; $CTR$ – change in costs of recultivation as a result of development of science and equipment in the direction of creation of technologies of recultivation; $CN$ – change in a

configuration of the land plots broken by the enterprise; $Q$ – change of requirements to quality of recultivation of lands by types and the directions of recultivation.

The accumulated funds on a tender basis are distributed between the contract organizations specializing in recultivation of the broken sites.

On the basis of algorithm, in case of non-performance by the enterprises subsoil users of the obligations for assignment of monetary assignments procedure of penalties is applied to them (3).

$$\chi_i = \begin{cases} 0, \text{åñëè} Z_{\hat{o}i} \geq Z_i \\ (Z_i - Z_{\hat{o}i}) \times T_{INF}, \text{åñëè} Z_{\hat{o}i} < Z_i \end{cases}, \qquad 3)$$

where, $Z_{\hat{o}i}$ – the actual size of annual assignments of financial resources of the coal-mining enterprises in regional fund of recultivation of lands, thousand rubles; $Z_i$ – expected size of assignments of a resource $i$ – ym the coal-mining enterprise in regional fund of recultivation of lands, calculated, taking into account set of parameters (S); $T_{INF}$ – rate of inflation.

**4. Conditions of transfer of development or its sale**

The control algorithm of financing of works on recultivation is developed and ready to use, is approved when calculating a stream of the financial resources intended for recultivation, Stepanovsky coal mine which primary activity is coal mining in the open way (Novokuznetsk).

Methodical recommendations about use of a control algorithm of financing of works on recultivation can be acquired to the address:

FGBOOU WAUGH "The Siberian state industrial university", st. of Kirov 42, Novokuznetsk, Kemerovo Region, Russia, 654007.

Phone: (8-3843) 70-15-49.

E-mail: ele-frank@yandex.ru

## ADVERTISING AND TECHNICAL DESCRIPTION "Presentation" state registration of results of intellectual activity"

*Federal public budgetary scientific institution "Institute of Management of Formation of the Russian Academy of Education"*

*Galkina A.I.*

***UDC** 37:001.12/.18*

***GRNTI** 14.01.11*

**1. Functional purpose of a product, scope, its restrictions**

This registration was prepared for demonstration on an academic council of Institute of Russian joint stock company of department of education for confirmation of need of initiative research work on branch registration of the works of science, in a form which are not registered in system of the state registration. Shortcomings of the state system of registration for monitoring of the institutions subordinated to the Ministry of Education and Science performing the state tasks are considered. Is proved by actual initiative NIR, the purposes, tasks, an order of performance and results of NIR in 2016 are specified. The presentation consists of 27 slides

Государственная система регистрации результатов интеллектуальной деятельности

**Интеллектуальная собственность это:**

1) произведения науки, литературы и искусства;
2) программы для электронных вычислительных машин (программы для ЭВМ);
3) базы данных…
7) изобретения;
8) полезные модели…
13) фирменные наименования;
14) товарные знаки ….

**И т.д.**

Государственная система регистрации результатов интеллектуальной деятельности

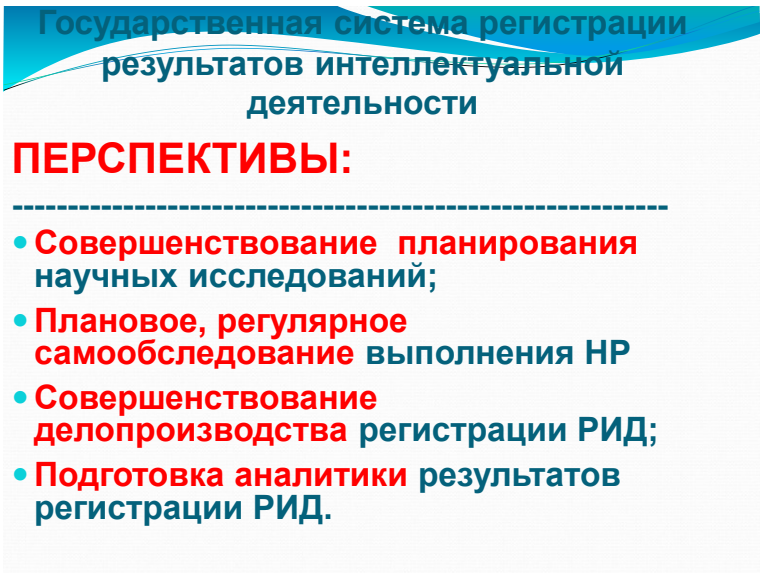
**ПРАВОВАЯ ОХРАНА:**

- Патентно-лицензионная деятельность
- Защита объектов интеллектуальной собственности
- Авторско-правовая охрана

Государственная система регистрации результатов интеллектуальной деятельности

**Государственная система регистрации РИД осуществляется:**

- **ФГАНУ ЦИТИС** – регистрация НР, НИР, НИОКТР, диссертаций, программ для ЭВМ
- **РОСПАТЕНТ (+ Онлайн-Патент)** – патентование программ для ЭВМ, изобретений, полезных моделей, промышленных образцов, топологий микросхем;
- **НТЦ ИНФОРМРЕГИСТР** - регистрация электронных изданий




**2. The used technical means**

System requirements: IBM PC, Intel, 500 MHz; 524 Mb RAM; an empty seat on HDD of 524288 KB; Windows XP above; mouse. Development volume – 537 KB.

**3. Special conditions and requirements of organizational, technical and technological character**

The presentation is executed in PowerPoint 2016 for demonstration on an academic council of Institute of management of formation of Russian joint stock company.

**4. Conditions of transfer of documentation or its sale**

All rights for this RID are protected by publication on http://госзадание.рф/scproject/index/index.

## ADVERTISING AND TECHNICAL DESCRIPTION "Plan program of initiative researches on a subject: "Branch registration of the works of science received as a result of performance of the state task of subordinated institutions of the Ministry of Education and Science"

*Federal public budgetary scientific institution "Institute of Management of Formation of the Russian Academy of Education"*

*Galkina A.I*

***UDC** 37:001.12/.18*

***GRNTI** 14.01.11*

**1. Functional purpose of a product, scope, its restrictions**

NIR purpose: to theoretically prove, develop and introduce branch system of registration of scientific production for the education which is not captured by structures of the state account and registration, allowing to make more effectively the administrative decisions connected with development of pedagogical science.

**Problems of NIR in 2016**:

1. On the basis of the carried-out analysis of the existing system of the state registration in education to define its main problems connected with specifics of pedagogical activity

2. Development of model of branch system of registration of scientific production of subordinated institutions of the Ministry of Education and Science for education taking into account the available experience of the joint fund of the electronic resources "Science and education"

3. Drawing up the specification for creation of the database of branch system of registration of scientific production of subordinated institutions of the Ministry of Education and Science

4. Development of a research prototype of the database of branch system of registration of scientific production of subordinated institutions of the Ministry of Education and Science and its approbation on the example of scientific results of Institutes of Russian joint stock company

Scientific novelty. The expected results of scientific research The complex of the organizational and administrative, standard and methodical, tekhnologo-program and information decisions allowing to keep account of results of scientific activity of establishments subordinated to the Ministry of Education and Science of the Russian Federation, which are not captured by structures of the state account and registration (76% of all volume of objects of intellectual property) is result of this scientific research.

The scientific importance of the expected results of research. Results of scientific research will allow to reveal a vector of the direction, perspective regarding preparation of scientific shots, to provide effective management and control of target use of the allocated budgetary funds, will create conditions for expanded reproduction of scientific capacity of the country that answers the purpose of the Program of basic scientific researches of the state academies of Sciences for 2013 - 2020.

Potential opportunities of use of results of research at the solution of applied tasks. Results of this scientific work will allow to carry out monitoring among subordinated institutions of the Ministry of Education and Science for identification of the most knowledge-intensive and perspective scientific centers, formation of the qualitative scientific and educational environment, reduction of financing of scientific works of establishments subordinated to the Ministry of Education and Science of the Russian Federation at the expense of an exception of duplication of results of scientific work.

Relevance of research. At the present stage there was the state system of registration of results of intellectual activity. The following organizations participate in work of the Russian system of registration of results of intellectual activity:

1. Federal public autonomous scientific institution "Center of Information Technologies and Systems of Federal Executive Authorities" of the Ministry of Education and Science of the Russian Federation.

2. Federal Service for Intellectual Property.

3. Federal state unitary enterprise "Scientifically Technical Information Registry Center".

The federal public autonomous scientific institution "Center of Information Technologies and Systems of Federal Executive Authorities" of the Ministry of Education and Science of the Russian Federation (to FGAN TSITIS – the former VNTITs – the All-Russian scientific and technical information center) which is carrying out formation of fund of not published sources of scientific and technical information (NTI - NIOKTR) as component of national library and information fund of the Russian Federation, and results of performance of NIOKTR - RIDY of the following forms:

- reports on NR, NIR, research and development, TR;
- invention;
- computer program;
- useful model;
- database;
- industrial sample;
- topology of integrated chips;
- selection opening;
- commodity sign and service marks;
- know-how (Know-how);
- commercial designation;
- algorithm;

- genetic resource.

Federal Service for Intellectual Property (ROSPATENT) (departmental submission to the Ministry of Economic Development of the Russian Federation), carrying-out registration and patenting of results of basic and applied scientific researches – results of intellectual activity (RIDY) of the following forms:

- invention;
- computer program;
- useful model;
- database;
- industrial sample;
- topology of integrated chips;
- selection opening;
- commodity sign and service marks;
- know-how (Know-how);
- commercial designation;
- algorithm;
- genetic resource.

The federal state unitary enterprise "STC Information Registry" (departmental submission to the Ministry of Telecom and Mass Communications of the Russian Federation) which is carrying out registration and the accounting of results of basic and applied scientific researches – results of intellectual activity (RIDY) in the form of the electronic editions i.e. which passed publishing processing and industrially duplicated by sets, series, circulations.

Work of the Russian Unified information system of the accounting of results of research, developmental and technological works is supported by the branch funds of registration of the results of intellectual activity (RIA) existing in various areas of national economy: health care, transport, education, defense. Branch funds are focused on specifics of areas of national economy which they serve.

Researches showed that 80% of results of scientific researches in an education system have the forms excellent, from forms of objects of registration of FGANU "TsITIS", ROSPATENT, Federal State Unitary Enterprise STC Information Registry. 95% of the above-stated 80% of results of scientific researches in an education system, have single execution, and at once on completion of development, are placed in local networks of educational institutions, forming scientific and educational space of data of educational institutions.

Thus, 76% of results of scientific activity of establishments subordinated to the Ministry of Education and Science of the Russian Federation, including, executed on the state tasks, are not considered and unknown to community Russian and international scientific teaching[1].

In too time, during procedure of licensing and certification of the educational institutions subordinated to the Ministry of Education and Science of the Russian Federation, according to the Order of the Ministry of Education and Science of the Russian Federation of 25.10.11 No. 2267 "About the statement of the criteria indicators necessary for definition of type and a type of educational institution of the higher professional and secondary professional education" the indicators demanded by procedures of licensing and certification, are not confirmed by any type of registration, in a type of its absence.

The similar situation develops during certification of scientific and pedagogical workers on assignment of academic statuses. According to the Provision on assignment of academic statuses approved by the resolution of the Government of the Russian Federation of 10.12.2013 No. 1139. The section II "Criteria of assignment of academic statuses and the requirement to the persons applying for assignment of academic statuses on scientific specialties" is a set of points concerning results of scientific and methodical activities for the main educational programs in the form of textbooks and manuals.

[1] On materials of the Joint fund of the electronic resources "Science and education" (FGBN IUO RAO)

These scientific and pedagogical materials[2] are registered nobody, except for the Joint fund of the electronic resources "Science and education" (to FGBN IUO OF RUSSIAN JOINT STOCK COMPANY) in which registration is facultative, not considered at certification of scientific and teaching structure.

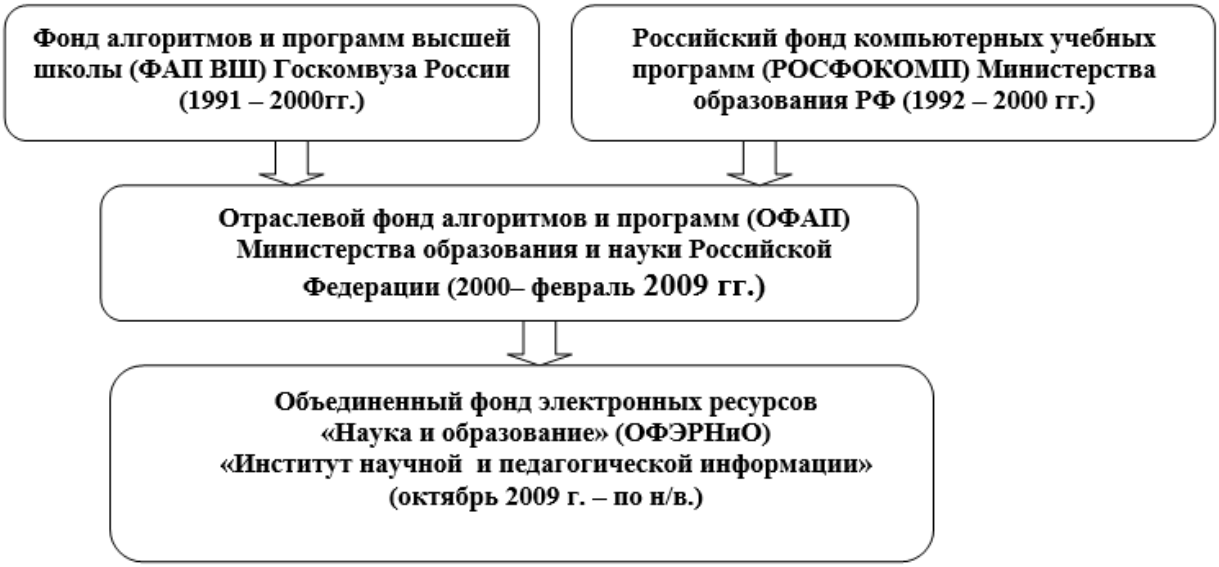



Fig. 1. Historical successorship OFERNIO

The joint fund of the electronic resources "Science and education" is intended for [5]:

– accumulations of information on the electronic resources of science and education having an appearance "unpublished documents";

– standardization and standardization of semistructured information on electronic resources;

– estimates of electronic resources of science and education on compliance to requirements of novelty and priority;

– cataloguing of electronic resources of scientific and educational appointment;

– providing the available, full and transparent notification of scientific and pedagogical community of the country about the last achievements in the field of science and education.

Main objectives OFERNIO are presented in fig. 2.

[2] It is about the scientific and pedagogical materials (textbooks and manuals) having single realization, placed in local networks of educational institutions and taking a form of electronic resources.

Fig. 2. Main objectives OFERNIO

Thus, in practice of registration of results of scientific activity the following contradictions were created between:

- need of registration of results of scientific activity for education and impossibility to capture specific objects of education of FGANU of "TsITIS", ROSPATENT", Federal State Unitary Enterprise STC Information Registry;
- the existing system of the state registration of scientific results and lack of its connection with procedures of certification of teachers and accreditations of the educational organizations;
- the developed system of registration and need of an exception of duplication when forming the state task, the organization of design activity;
- need to reveal perspective vectors of development of pedagogical science and approaches from registration of scientific results in "TsITIS" FGANU, ROSPATENT", Federal State Unitary Enterprise STC Information Registry.

Problem: how on the basis of the available experience of OFERNIO to provide a complex of the organizational and administrative, standard and methodical, tekhnologo-program and information decisions allowing to keep account of results of scientific activity of establishments subordinated to the Ministry of Education and Science of the Russian Federation, which are not captured by structures of the state account and registration?

Action plan

| | Product name | Terms | Responsible |
|---|---|---|---|
| . | Problems of system of the state registration in education of the Russian Federation at innovative changes (Article) | 1st quarter | Galkina A.I.<br>Bobkova E.Yu. |
| . | Model of branch registration of scientific production of subordinated institutions of the Ministry of Education and Science for education (2 articles) | 2nd quarter | Galkina A.I.<br>Bobkova E.Yu.<br>Grishan I.A. |
| . | The description of the database of branch registration of scientific production of subordinated institutions of the Ministry of Education and Science for education (specification) | 2nd quarter | Galkina G. I.<br>Grishan A.I. |

| | | | |
|---|---|---|---|
| . | Research prototype of the database of branch registration of scientific production of subordinated Institutes of Russian joint stock company (Program) | 3rd quarter | Galkina G. I.<br>Grishan A.I. |
| . | Methodical recommendations about work with the skilled version of the database of branch registration of scientific production of subordinated Institutes of Russian joint stock company (Methodical recommendations) | 4th quarter | Galkina G. I.<br>Burnashova E.A. |

Productivity of NIR:

| Indicator | Value |
|---|---|
| The number of the defended dissertations for degree of the candidate of science | 0 |
| The number of the defended dissertations for degree of the doctor of science | 0 |
| The number of publications in the magazines indexed in the Science Network database | 0 |
| The number of publications in the magazines indexed in the Scopus database | 1 |
| The number of publications in the magazines indexed in the Russian and international information and analytical systems of scientific citing (The Russian index of scientific citing, Google Scholar, European Reference Index for the Humanities, etc.) | 2 |
| Amount of the received results of intellectual activity | 1 |

**2. The used technical means**

System requirements: IBM PC, Intel, 500 MHz; 524 Mb RAM; an empty seat on HDD of 524288 KB; Windows XP above; mouse. Development volume – 840 KB.

**3. Special conditions and requirements of organizational, technical and technological character**

The plan program it is executed in Word 2016, Excel 2016 for representation on an academic council of Institute of management of formation of Russian joint stock company.

**4. Conditions of transfer of documentation or its sale**

All rights for this RID are protected by publication on http://госзадание.рф/scproject/index/index

## ADVERTISING AND TECHNICAL DESCRIPTION "Presentation" branch registration of the works of science received as a result of performance of the state task of subordinated institutions of the Ministry of Education and Science of the Russian Federation"

*Federal public budgetary scientific institution "Institute of Management of Formation of the Russian Academy of Education"*

*Galkina A.I., Bobkova E.YU.*

***UDC 37:001.12/.18***

***GRNTI** 14.01.11*

**1. Functional purpose of a product, scope, its restrictions**

At the present stage there was the state system of registration of results of intellectual activity. The following organizations participate in work of the Russian system of registration of results of intellectual activity:

1. Federal public autonomous scientific institution "Center of Information Technologies and Systems of Federal Executive Authorities" of the Ministry of Education and Science of the Russian Federation.

2. Federal Service for Intellectual Property.

3. Federal state unitary enterprise "Scientifically Technical Information Registry Center".

The federal public autonomous scientific institution "Center of Information Technologies and Systems of Federal Executive Authorities" of the Ministry of Education and Science of the Russian Federation (to FGAN TSITIS – the former VNTITs – the All-Russian scientific and technical information center) which is carrying out formation of fund of not published sources of scientific and technical information (NTI - NIOKTR) as component of national library and information fund of the Russian Federation, and results of performance of NIOKTR - RIDY of the following forms:

- reports on NR, NIR, research and development, TR;
- invention;
- computer program;
- useful model;
- database;
- industrial sample;
- topology of integrated chips;
- selection opening;
- commodity sign and service marks;
- know-how (Know-how);
- commercial designation;
- algorithm;
- genetic resource.

Federal Service for Intellectual Property (ROSPATENT) (departmental submission to the Ministry of Economic Development of the Russian Federation), carrying-out registration and patenting of results of basic and applied scientific researches – results of intellectual activity (RIDY) of the following forms:

- invention;
- computer program;
- useful model;
- database;
- industrial sample;
- topology of integrated chips;
- selection opening;
- commodity sign and service marks;
- know-how (Know-how);
- commercial designation;
- algorithm;
- genetic resource.

The federal state unitary enterprise "STC Information Registry" (departmental submission to the Ministry of Telecom and Mass Communications of the Russian Federation) which is carrying out registration and the accounting of results of basic and applied scientific researches – results of intellectual activity (RIDY) in the form of the electronic editions i.e. which passed publishing processing and industrially duplicated by sets, series, circulations.

Work of the Russian Unified information system of the accounting of results of research, developmental and technological works is supported by the branch funds of registration of the results of intellectual activity (RIA) existing in various areas of national economy: health care, transport, education, defense. Branch funds are focused on specifics of areas of national economy which they serve.

Researches showed that 80% of results of scientific researches in an education system have the forms excellent, from forms of objects of registration of FGANU "TsITIS", ROSPATENT, Federal State Unitary Enterprise STC Information Registry. 95% of the above-

stated 80% of results of scientific researches in an education system, have single execution, and at once on completion of development, are placed in local networks of educational institutions, forming scientific and educational space of data of educational institutions.

Thus, 76% of results of scientific activity of establishments subordinated to the Ministry of Education and Science of the Russian Federation, including, executed on the state tasks, are not considered and unknown to community Russian and international scientific teaching.

## Цель и задачи НИР по теме на 2016 год

**Цель НИР:** разработка отраслевой системы регистрации научной продукции подведомственных учреждений Минобрнауки для сферы образования, позволяющей более эффективно принимать управленческие решения, связанные с развитием педагогической науки.

**Задачи НИР в 2016 году:**

- На основе проведенного анализа существующей системы государственной регистрации в сфере образования определить ее основные проблемы, связанные со спецификой педагогической деятельности
- Разработка модели отраслевой системы регистрации научной продукции подведомственных учреждений Минобрнауки для сферы образования с учетом имеющегося опыта объединенного фонда электронных ресурсов «Наука и образование»
- Составление технического задания для создания базы данных отраслевой системы регистрации научной продукции подведомственных учреждений Минобрнауки
- Разработка опытной версии базы данных отраслевой системы регистрации научной продукции подведомственных учреждений Минобрнауки и ее апробация на примере научных результатов Институтов РАО

## Научная продукция по теме НИР в 2016 году

| Научно-теоретическая продукция | Потребители | Научно-прикладная продукция | Потребители |
|---|---|---|---|
| 1. Проблемы системы государственной регистрации в сфере образования РФ при системных изменениях (статья) | Научное сообщество | 4. Опытная версия базы данных отраслевой регистрации научной продукции подведомственных Институтов РАО (программа) | Министерство образования и науки РФ<br><br>Подведомственные учреждения Минобрнауки РФ |
| 2. Модель отраслевой регистрации научной продукции подведомственных учреждений Минобрнауки для сферы образования (статья) | | 5. Методические рекомендации по работе с опытной версией базы данных отраслевой регистрации научной продукции подведомственных Институтов РАО (методические рекомендации) | |
| 3. Описание базы данных отраслевой регистрации научной продукции подведомственных учреждений Минобрнауки для сферы образования (техническое задание) | | | |

**2. The used technical means**

System requirements: IBM PC, Intel, 500 MHz; 524 Mb RAM; an empty seat on HDD of 524288 KB; Windows XP above; mouse. Development volume – 840 KB.

**3. Special conditions and requirements of organizational, technical and technological character**

The presentation is executed in PowerPoint 2010 for demonstration on an academic council of Institute of management of formation of Russian joint stock company.

**4. Conditions of transfer of documentation or its sale**

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# ADVERTISING AND TECHNICAL DESCRIPTION "Infologichesky Model of the Database of Branch Registration of the Works of Science Received as a result of Performance of the State Task of Subordinated Institutions of the Ministry of Education and Science"

*federal public budgetary scientific institution "Institute of Management of Formation of the Russian Academy of Education"*
*Galkina A.I., Grishan I.A., Bobkova E.YU.*

***UDC 37:001.12/.18***
***GRNTI** 14.01.11*

**1. Functional purpose of a product, scope, its restrictions**

Researches of specialists of the Joint fund of the electronic resources "Science and education" showed that 80% of results of scientific researches in an education system have the forms excellent, from forms of objects of registration of FGANU "TsITIS", ROSPATENT, Federal State Unitary Enterprise STC Information Registry.

95% of the above-stated 80% of results of scientific researches in an education system, have single execution, and at once on completion of development, are placed in local networks of educational institutions, forming scientific and educational space of data of educational institutions.

Thus, 76% of results of scientific activity of establishments subordinated to the Ministry of Education and Science of the Russian Federation, including, executed on the state tasks, are not considered and unknown to community Russian and international scientific teaching.

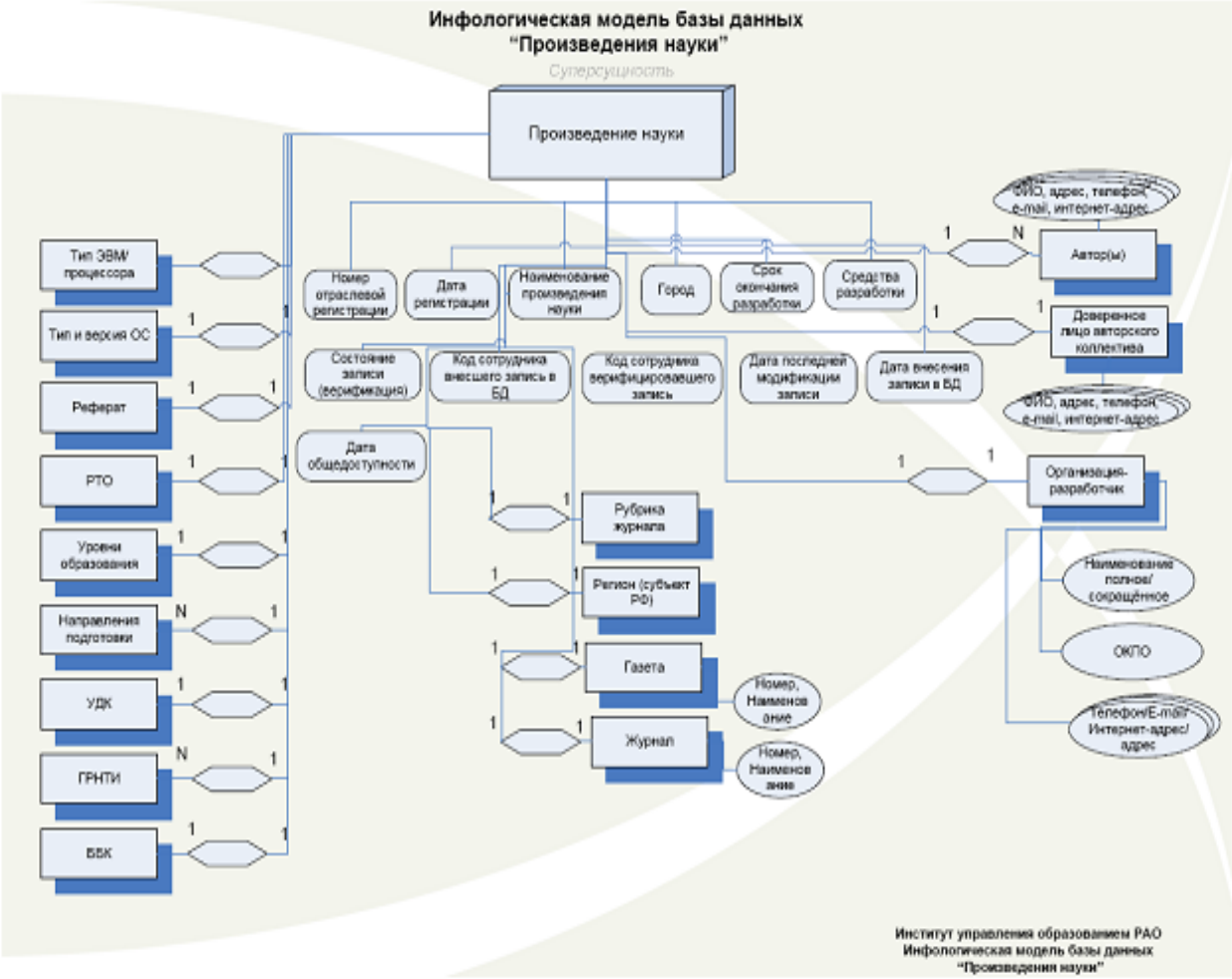
In too time, during procedure of licensing and certification of the educational institutions subordinated to the Ministry of Education and Science of the Russian Federation, according to the Order of the Ministry of Education and Science of the Russian Federation of 25.10.11 No. 2267 "About the statement of the criteria indicators necessary for definition of type and a type of educational institution of the higher professional and secondary professional education" the indicators demanded by procedures of licensing and certification, are not confirmed by any type of registration, in a type of its absence.

The similar situation develops during certification of scientific and pedagogical workers on assignment of academic statuses. According to the Provision on assignment of academic statuses approved by the resolution of the Government of the Russian Federation of 10.12.2013 No. 1139. The section II "Criteria of assignment of academic statuses and the requirement to the persons applying for assignment of academic statuses on scientific specialties" is a set of points concerning results of scientific and methodical activities for the main educational programs in the form of textbooks and manuals.

These scientific and pedagogical materials are registered nobody, except for the Joint fund of the electronic resources "Science and education" (FGBN IUO RAO) in which registration is facultative, not considered at certification of scientific and teaching structure.

Therefore, in the existing period of the most severe world crisis, in the conditions of limited budgetary financing subordinated Ministry of Education and Science of the Russian Federation institutions, are a demand in branch registration of works of the science accompanied with an assessment of novelty and priority of these results of intellectual activity.

The Infologichesky model of the database of branch registration of works of science is developed within initiative research work "Branch registration of the works of the science received as a result of performance of the state task of subordinated institutions of the Ministry of Education and Science", supported by the Ministry of Education and Science. The model describes structure of attributes of superessence as which WORK of SCIENCE, structure of entities and interaction of superessence with entities acts




**2. The used technical means**

System requirements: IBM PC, Intel, 500 MHz; 524 Mb RAM; an empty seat on HDD of 524288 KB; Windows XP above; mouse. Development volume – 126 KB.

**3. Special conditions and requirements of organizational, technical and technological character**

The DB Infologichesky model of works of science is constructed
in the ER language (The essence communication model (entity-relationship model)).

**4. Conditions of transfer of documentation or its sale**

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## ADVERTISING AND TECHNICAL DESCRIPTION "Research Prototype of the Database of Branch Registration of Scientific Production of the Establishments Subordinated to the Ministry of Education and Science of the Russian Federation"

*Federal public budgetary scientific institution "Institute of Management of Formation of the Russian Academy of Education"*
*Galkina A.I., Grishan I.A., Burnasheva E.A.*

***UDC** 37:001.12/.18*
***GRNTI** 14.01.11*

**1. Functional purpose of a product, scope, its restrictions**

This year branch registration of results of intellectual activity celebrated the 25 anniversary., therefore researches on the scientific subject "Branch Registration of the Works of Science Received as a result of Performance of the State Task of Subordinated Institutions of the Ministry of Education and Science" and formation of a prototype of the research database of branch registration of the works of science executed according to the state order subordinated establishments by the Ministry of Education and Science was based on the saved-up and approved organizational and administrative, standard and methodical, program and information support of the Joint fund of the electronic resources "Science and education".

Database OFERNIO for 2016 from which data on results of intellectual activity were excluded is taken as a basis of the research database of works of science:

- scientific and Russian Academies of Sciences educational institutions, Ministry of Defence of the Russian Federation, Ministry of Culture of Russia, Ministry of Agriculture of the Russian Federation, Mintransport of Russia, Ministry of Communications of Russia, Russian Ministry of Health;
- authors-individuals;
- groups of authors;
- commercial and non-state higher education institutions.

Thus the volume of the database, RID of the establishments subordinated to the Ministry of Education and Science of the Russian Federation representing result of registration made 51% of all database from January of this year to a present situation.

Characteristics of fields of the database as approved for 25 years, there were those mi that in OFERNIO'S DB, but a number of reference books from which selection and fillings of a number of fields, in particular SPECIALTY AND SPECIALIZATION, the DIRECTION of PREPARATION, EDUCATION LEVEL and a number of other reference books is made are specified and updated.

However, the structure of fields DB underwent considerable reduction as:

- the DB of branch registration of works of science is created (information on results of registration in FGANA TSITIS – 58,5% of all volume of a DB of OFRNIO is excluded);
- the centralized database without participation of representations and offices in regions is created (mediation of 30 offices and representations OFERNIO is liquidated);
- the DB of the works of science in a form which are not subject to registration in FGANA TSITIS, ROSPATENT, STC the INFORMATION REGISTRY (RIDY of nearly 700 forms) is created;
- the DB of the works of science meeting the requirements of novelty, priority and scientific character is created.

The structure of fields of the Database is described in the DB infologichesky model of works of science of subspecies of Minobranauki.

The research prototype of a DB of works of science has the *.xlsx format which through the csv format is transformed to the MS SQL format.

The fragment of a DB of works of science is given below:

| № рег-ции | Дата рег-ции | Наименование | Реферат | Автор(ы) | Средтства разработки | ЭВМ | ОС | Город | Организация-разработчи | Адрес | Телефон | Эл. Почта | Инте | УДК | ГРНТИ | ББК | ОКПО |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 21585 | 12.01.2016 | ИНСТРУМЕНТА/ | Разработанны | Мухина М.В., | VBA Office 2007, Moodle | Intel Pentiu | Windows 95 | Нижний Новг | ФГБОУ ВО «Нижегородски | 603950 , Н | (831) 436-1 | mariyamuhina@yandex.ru | | 378 | 14.35.07, 67.01.33 | | |
| 21586 | 12.01.2016 | Дистанционный | Электронный | Курзаева Л.В. | Moodle 1.9 | Intel | Windows XP | Магнитогорск | ФГБОУ ВО «Магнитогорск | 455000, Чє | (351) 922-1 | ceoridot@yandex.ru | | 378.02:37. | 14.35.09, 20.23.25 | | |
| 21589 | 12.01.2016 | Дистанционный | ЭУМК разраб | Мицан Е.Л. | Moodle 1.9 | Intel | Windows XP | Магнитогорск | ФГБОУ ВО «Магнитогорск | 455000, Чє | (351) 922-1 | ceoridot@yandex.ru | | 378.02:37. | 14.35.09, 14.29.31, 77.01.39 | | |
| 21590 | 12.01.2016 | Дистанционный | ЭУМК «Психо | Семихатская | Moodle 1.9 | Intel | Windows XP | Магнитогорск | ФГБОУ ВО «Магнитогорск | 455000, Чє | (351) 922-1 | ceoridot@yandex.ru | | 378.02:37. | 14.35.09, 15.01.07 | | |
| 21591 | 12.01.2016 | Дистанционный | ЭУМК для наг | Неретина Т.Г. | Moodle 1.9 | Intel | Windows XP | Магнитогорск | ФГБОУ ВО «Магнитогорск | 455000, Чє | (351) 922-1 | ceoridot@yandex.ru | | 378.02:37. | 14.35.09, 14.01.11 | | |
| 21592 | 12.01.2016 | Дистанционный | В ЭУМК «Теор | Исаева И.Ю. | Moodle 1.9 | Intel | Windows XP | Магнитогорск | ФГБОУ ВО «Магнитогорск | 455000, Чє | (351) 922-1 | ceoridot@yandex.ru | | 378.02:37. | 14.35.09, 14.01.11 | | |
| 21593 | 12.01.2016 | Дистанционный | Данный ЭУМ | Трофимова В. | Moodle 1.9 | Intel | Windows XP | Магнитогорск | ФГБОУ ВО «Магнитогорск | 455000, Чє | (351) 922-1 | ceoridot@yandex.ru | | 378.02:37. | 14.35.09, 06.01.29 | | |
| 21594 | 12.01.2016 | Дистанционный | Данный ЭУМ | Иванова Т.А. | Moodle 1.9 | Intel | Windows XP | Магнитогорск | ФГБОУ ВО «Магнитогорск | 455000, Чє | (351) 922-1 | ceoridot@yandex.ru | | 378.02:37. | 14.35.09, 06.73.00 | | |
| 21595 | 12.01.2016 | Дистанционный | Данный ЭУМ | Трофимова В. | Moodle 1.9 | Intel | Windows XP | Магнитогорск | ФГБОУ ВО «Магнитогорск | 455000, Чє | (351) 922-1 | ceoridot@yandex.ru | | 378.02:37. | 14.35.09, 06.01.29, 06.35.51 | | |
| 21596 | 12.01.2016 | Программа мик | Разработанна | Поляков Д.А. | CodevisionAVR | Intel | Windows 95/9 | Омск | ФГБОУ ВО «Омский госуд | 644050 Ом | (381) 265-3 | polyakowdmitry@yandex.ru | | 621.382-0 | 47.14.07 | | |
| 21597 | 12.01.2016 | Программа «Об | Электронное | Пепеляев А.В | Sothink SWF Quicker | Pentium IV | Windows XP | Омск | ФГБОУ ВО «Омский госуд | 644050 Ом | (381) 265-3 | polyakowdmitry@yandex.ru | | 378 | 14.35.07, 78.25.10 | | |
| 21598 | 12.01.2016 | Учебно-методи | Цель настояш | Джиргалова С | Acrobat Reader | Intel Pentiu | Windows 2000 | Элиста | ФГБОУ ВО «Калмыцкий гс | 358000, г. | (847) 222-2 | inno2011@mail.ru | | 378 | 27.03.2017 | | |
| 21602 | 21.01.2016 | Программно-ар | Назначение Г | Дементьев А | MS Office 2007 и следує | IBM PC 486 | Windows 7 и в | Новосибирск | ФГБОУ ВО «Сибирский го | 630049, г. | (383) 328-0 | kamenev@stu.ru | | 656.001.18 | 73.01.75 | | |
| 21605 | 21.01.2016 | Учебное пособ | Цель настояш | Волошина Т.В | Word, Internet Explorer | Intel Pentiu | Windows 2003 | Элиста | ФГБОУ ВО «Калмыцкий гс | 358000, г. | (937) 197-7 | machkaewa-nt5@yand | www | 378 | 14.35.07, 34.31.01 | | |
| 21606 | 26.01.2016 | Портфолио аби | Внедрение п | Курылёва О.И | MS Excel 2010, MS Word | Intel | Windows 2003 | Нижний Новг | ФГБОУ ВО "Нижегородски | 603950, Н | (902) 785-2 | kurylev-nnov@mail.ru | | 378 | 14.15.15, 14.01.11 | | |
| 21607 | 26.01.2016 | Электронный с | Графический | Янишевская А | MS Visual Studio | Pentium IV | Windows XP | Омск | ФГБОУ ВО «Омский госуд | 644050, г. | (812) 65-35 | ipo@omgtu.ru | | 002.6:024 | 20.51.19 | | |
| 21608 | 26.01.2016 | Программа «Ав | Программа п | Филиппов Р.А | Delphi 7.0 | Pentium IV | Windows XP | Омск | ФГБОУ ВО «Омский госуд | 644050, г. | (812) 65-35 | ipo@omgtu.ru | | 002:330.16 | 20.51.17 | | |
| 21609 | 27.01.2016 | Электронное п | Разработанно | Габелкова Е.В | Microsoft Office, MIMIO | Intel Pentiu | Windows 7 | Москва | ГБОУ Гимназия №1526 | 117535, М | (495) 382-0 | aks-04@yandex.ru | | 373.1.013 | 14.25.07, 20.01.45 | | |
| 21610 | 27.01.2016 | Электронное у | Разработанно | Габелкова Е.В | Microsoft Office, MIMIO | Intel Pentiu | Windows 7 | Москва | ГБОУ Гимназия №1526 | 117535, М | (495) 382-0 | aks-04@yandex.ru | | 373.1.013 | 14.25.07, 20.01.45 | | |
| 21611 | 27.01.2016 | Электронное у | Разработанно | Габелкова Е.В | Microsoft Office, MIMIO | Intel Pentiu | Windows 7 | Москва | ГБОУ Гимназия №1526 | 117535, М | (495) 382-0 | aks-04@yandex.ru | | 373.1.013 | 14.25.07, 20.01.45 | | |
| 21612 | 27.01.2016 | Научно-методи | Научно-мето, | Русанова А.А. | Microsoft Office, Google | Intel Pentiu | Windows 7 | Москва | ГБОУ Гимназия №1526 | 117535, М | (495) 382-0 | aks-04@yandex.ru | | 373.1.013 | 14.25.07, 14.01.11, 20.01.45 | | |
| 21613 | 27.01.2016 | Дистанционная | Целью данно | Морозова Ю. | VBA Office 2007, Interne | Intel Pentiu | VBA Office 200 | Москва | ГБОУ Гимназия №1526 | 117535, М | (495) 382-0 | aks-04@yandex.ru | | 373.1.02:3 | 14.25.09, 16.41.21 | | |
| 21614 | 27.01.2016 | Модули спецку | Спецкурс «Ст | Ошарина А.В. | Microsoft Office, HTML, | Intel Pentiu | Windows 7 | Москва | ГБОУ Гимназия №1526 | 117535, М | (495) 382-0 | aks-04@yandex.ru | | 373.1.02:3 | 14.25.09, 16.41.21 | | |
| 21615 | 27.01.2016 | Учебно-исслед | Творчество П | Попова Т.А., В | Microsoft Office, HTML, | Intel Pentiu | VBA Office 200 | Москва | ГБОУ Гимназия №1526 | 117535, М | (495) 382-0 | aks-04@yandex.ru | | 373.1.02:3 | 14.25.09, 13.11.47 | | |
| 21616 | 27.01.2016 | Взаимосвязь ру | Учебно-иссле | Попова Т.А, В | Microsoft Office, HTML, | Intel Pentiu | VBA Office 200 | Москва | ГБОУ Гимназия №1526 | 117535, М | (495) 382-0 | aks-04@yandex.ru | | 373.1.02:3 | 14.25.09, 16.41.21 | | |
| 21617 | 27.01.2016 | Школа будущег | Творческая р | Попова Т.А., | VBA Office 2007, Interne | Intel Pentiu | VBA Office 200 | Москва | ГБОУ Гимназия №1526 | 117535, М | (495) 382-0 | aks-04@yandex.ru | | 373.1.02:3 | 14.25.09, 16.41.21, 17.01.45 | | |
| 21619 | 27.01.2016 | Научно-методи | Научно-мето, | Семевич Е.Н. | Microsoft Office | Intel Pentiu | Windows 7 | Москва | ГБОУ Гимназия №1526 | 117535, М | (495) 382-0 | aks-04@yandex.ru | | 37:001.12/ | 14.01.11, 16.01.07 | | |
| 21620 | 27.01.2016 | Научно-методи | Научно-мето, | Семевич Е.Н. | Microsoft Office | Intel Pentiu | Windows 7 | Москва | ГБОУ Гимназия №1526 | 117535, М | (495) 382-0 | aks-04@yandex.ru | | 37:001.12/ | 14.01.11, 16.01.07 | | |

**2. The used technical means**

System requirements: IBM PC, Intel, 500 MHz; 524 Mb RAM; an empty seat on HDD of 524288 KB; Windows XP above; mouse. Development volume – 204 KB.

**3. Special conditions and requirements of organizational, technical and technological character**

The database of works of science is executed in Excel-2016 and has the *.xlsx format which through the csv format is transformed to the MS SQL format

**4. Conditions of transfer of documentation or its sale**

All rights for this RID are protected by publication on http://госзадание.рф/scproject/index/index.

## ADVERTISING AND TECHNICAL DESCRIPTION "The Program for Modelling of Process of Adaptation in an Antenna Lattice in Stationary Conditions"

*Bibarsov M.R., Aleshin S.L., Tkachev D.F., Pedan A.V., SHtreker E.N., CHernyshov A.G., Ladyka M.B.*

***UDC*** *621.396.67*
***GRNTI*** *47.45.29, 29.35.19*

**1. Functional purpose of the program, area of its application, its restriction**

1.1 Purpose of the program

The program for modeling of process of adaptation in an antenna lattice in stationary conditions is intended for modeling of process of adaptation in an antenna lattice by creation of the directional pattern of an adaptive antenna lattice, depending on the direction of sources of hindrances and a useful signal. The program allows to carry out the analysis of influence of power and the direction of arrival of hindrances on the directional pattern.

Stationary conditions of an alarm and interfering situation are understood as independence of angular coordinates of sources of signals and hindrances of time, i.e. location of satellite stations and relay satellites, and also stations of directors of hindrances do not change in space and time.

In a basis of the program the recurrent algorithm of adaptation realizing a method of adaptive suppression of hindrances an antenna lattice of systems of space communication in stationary conditions of an alarm and interfering situation on criterion the relation a signal / (a hindrance + noise) in the established and transitional modes is put.

The program is realized in the environment of Mathcad 14.

1.2 Description of work

Work of the program for modeling of process of adaptation in an antenna lattice in stationary conditions is carried out due to the recurrent algorithm of adaptation realizing a method of adaptive suppression of hindrances an antenna lattice of systems of space communication in stationary conditions of an alarm and interfering situation on criterion the relation a signal / (a hindrance + noise). In other words – in the directions of arrival of sources of hindrances in the directional pattern (DP) of the adaptive antenna lattice (AAL) "zero" are formed.

Work of the program begins with start of the file of the Adaptation Process Modelling program.

In figure 1 the tab of the program by means of which basic data on sources of a useful signal and hindrances are entered is presented.

As basic data input of the following parameters is provided in the program:

- direction of arrival of a useful signal and sources of hindrances;
- relative power of a useful signal and sources of hindrances;
- number of interfering signals;

– number of radiators of AAR;
– distance between radiators;
– number of iterations of transition process;
– feedback coefficient.

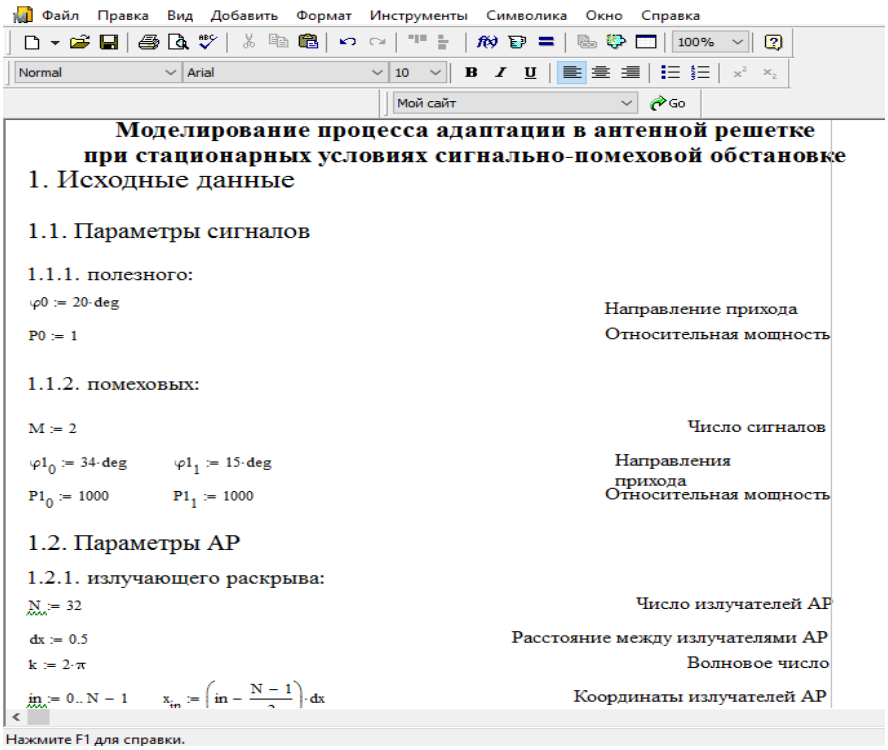



Figure 1 – A program tab with basic data

Time of adaptation and transition in set the mode will depend on number of interfering signals, coefficient of feedback, number of iterations of transition process and the relation of power of a useful signal to the power of sources of hindrances.

At reduction of value of coefficient of feedback – γ, providing stability and sufficient speed of convergence of algorithm, the quantity of steps grows, and accuracy increases. However, the choice too small value γ leads to the fact that transitional process does not meet, and too big – to its divergence.

Suppression of hindrances in AAR is carried out by calculation of the vector of weight coefficients (VWC) *of W* providing formation of zero DN in the direction of sources of hindrances. A quality indicator for evaluation of the work of the diagrammoobrazuyushchy scheme we use criterion of a maximum of the relation of power of a signal to the sum of capacities of noise and a hindrance (OSPSh) which can be presented in the following form:

$$Q = \frac{W^T R_{ss} W^*}{W^T R_{nn} W^*}, \qquad 1)$$

where *Rss* –a kovariatsionny matrix of a useful signal;

*Rnn* –a kovariatsionny matrix of own noise and external hindrances;

*W* –a vector of weight coefficients in channels of spatial processing;

∗–symbol of operations of complex interface;

*T* –transposing sign.

The vector of weight coefficients, optimum by criterion of a maximum of OSShP, can be found in a look:

$$W_{\text{опт}} = R_{nn}^{-1} S_0^*, \qquad 2)$$

where *S0* –the operating vector which elements are the complex amplitudes of signals of elements of an antenna lattice providing formation of the main maximum of DN in the direction of a useful signal.

In these conditions the matrix differential equation for determination of adaptive weight coefficients in systems of continuous time has an appearance:

$$\tau\frac{\mathrm{d}W}{\mathrm{d}t}+[E+\gamma R_{\mathrm{nn}}]W=S_0{}^*, \qquad 3)$$

where$E$–a single matrix;

τ–time constant;

γ–characterizes coefficient of transfer of a contour of management and it is identical to all contours.

In a discrete form the algorithm (3) can be presented by the following recurrence relation:

$$W(k+1)=[E+\gamma R_{nn}]W(k)+\Delta W(k), \qquad 4)$$

where $W$ ($k$+1)–VVK on ($k$+1) - m an estimation step;

*W(k)* –VVK values on *k-m* a step;

ΔW(k) –the vector which is characterized by the normal law of distribution with a zero average and dispersion σ2.

Parameters γ and σ2 have to be chosen so that were provided both stability, and sufficient speed of convergence of algorithm. It should be noted that when performing $W_{\text{орт}}=R_{nn}^{-1}S_0^*$ OSPSh reaches the maximum value when $Q=W^T R_{nn}W$, since the matrix *of Rnn* is Hermite, i.e. $(R_{nn}^{-1*})^m=R_{nn}^{-1}$.

In the absence of a useful signal the considered algorithm to within a constant multiplier coincides with algorithm by criterion of a minimum of a mean square mistake (SKO). At the same time the choice of the operating vector $S_0^*$ in algorithm by criterion of a maximum of OSPSh it is equivalent to the choice of a vector of mutual correlation accepted and basic signals $R_{xd}$ in algorithm by criterion of a minimum of SKO under a condition $R_{xd}=S_0^*$, that allows to receive identical values of optimum VVK for two algorithms.

Example of results of modeling:

Modeling of the stationary, transitional and established modes of functioning of the received algorithm was carried out on the example of ekvidistantny linear AAR with uniform amplitude distribution in which radiators are located with the step equal to a half of wavelength. Two situations at which the useful signal arrives from the direction φ = 200 with a relative power *of P0* = 1 were considered and 2 hindrances from the directions φ1 = 150, φ2 = 340 influence:

1. Linear AAR from 32 elements, the power of each of hindrances exceeds power level of a useful signal by 1000 times (*RP1* = 1000).

2. Linear AAR from 32 elements, the power of the first hindrance exceeded the power of a useful signal by 1000 times, and the power of the second hindrance – by 100 times (*RP2* = 100).

Schedules of the transitional, stationary and established modes of functioning of AAR, and also graphics of change of directional patterns of an antenna lattice are presented to process of adaptation in figures 2-5 respectively to each imitating situation.

The algorithm works as follows. Is able to *t0* timepoint when there is no useful signal and hindrances, AAR has the initial the amplitude-phase distribution (APD) which is characterized by existence only of internal noise of elements of an antenna lattice. As about the direction of arrival of a useful signal there is aprioristic information, the main petal of DN is ready for this direction (the stationary mode of functioning of AAR).

At approach of a timepoint *of t0* with arrival of a useful signal of AAR it is ready for a useful signal, and OSSh (the relation of power of a useful signal to internal noise) is equal for 32 to element AAR $Q=W^T R_{nn}W=30{,}343\ \partial Б$ (figure 2).

In a timepoint *of t1* of a hindrance influence on lateral petals of DN, as a result of this OSPSh decreases since capacities of hindrances are very big. The measuring instrument of level of a useful signal at the exit of AAR registers reduction of OSPSh and gives a signal of management for start of the mode of adaptation.

From the beginning of functioning of algorithm of adaptation there comes transitional process during which "zero" DN in the direction of influence of hindrances with preservation of the direction of the main petal on a source of a useful signal are formed (figures 4, 5). Upon termination of transition process (*t2* time) there comes the set mode when the main petal of DN is directed to a useful signal, and in the direction of hindrances sufficient failures of DN for providing optimum OSPSh (figures 4g, 5 of) are created.

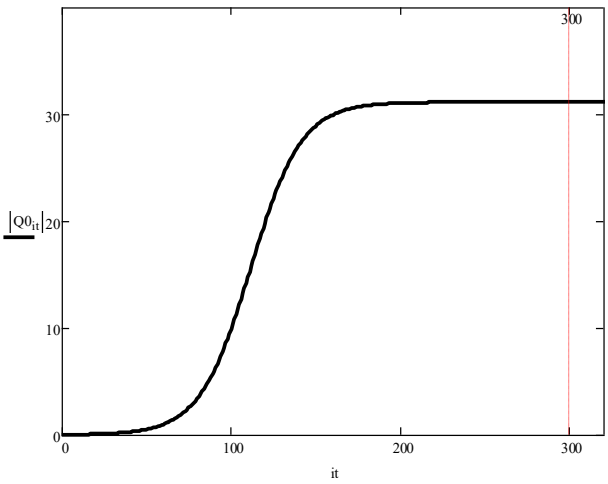



Figure 2 – Transitional process at *RP1/P0=1000* and *RP2/P0=1000*: for 32 element AAR

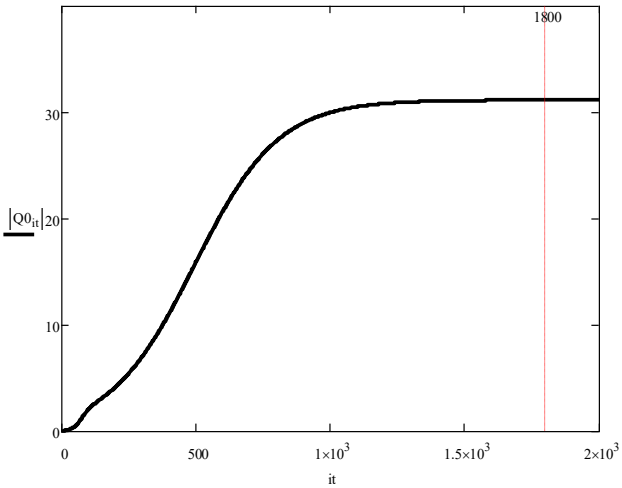



Figure 3 – Transitional process at *RP1/P0=1000* and *RP2/P0=100*: for 32 element AAR

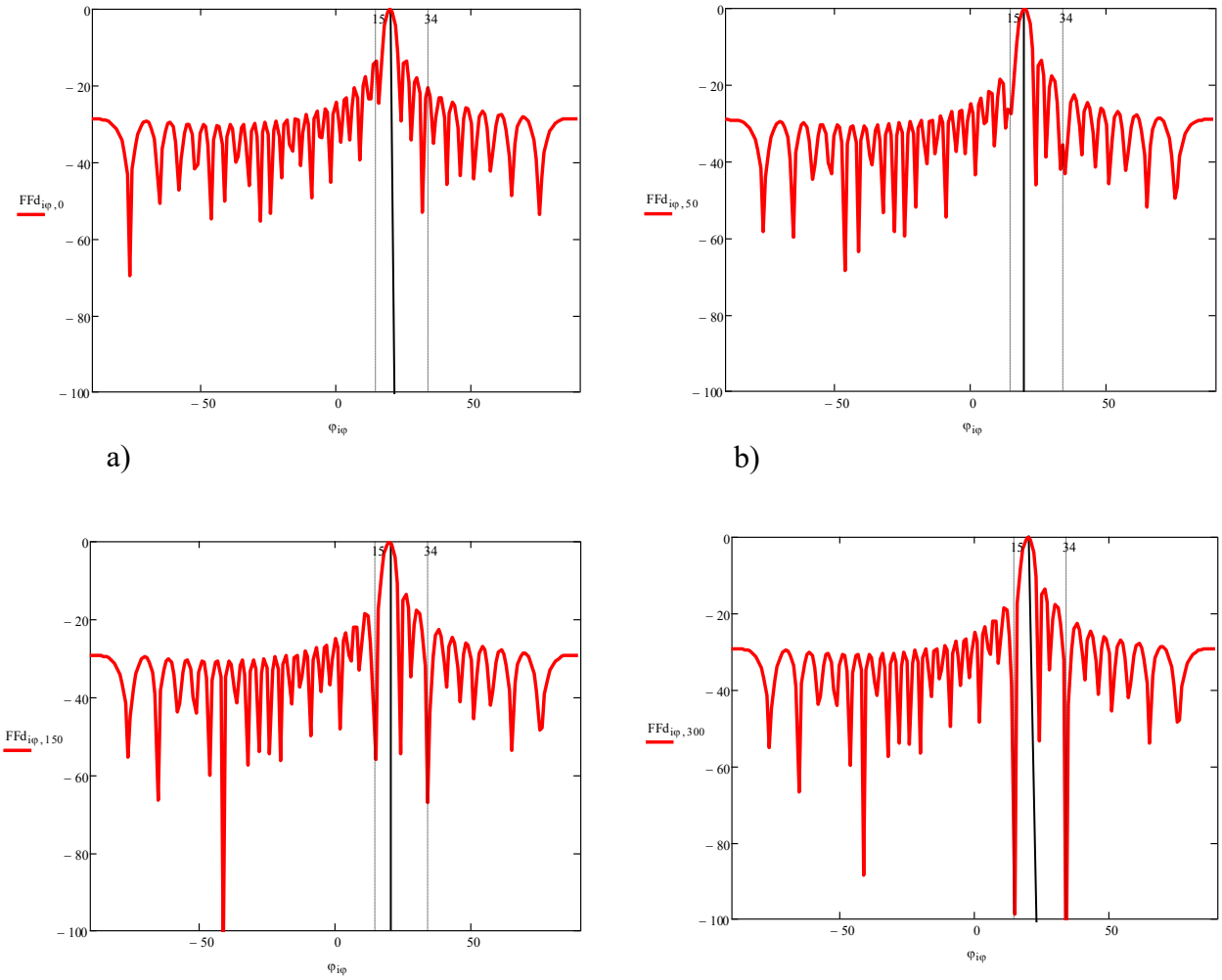
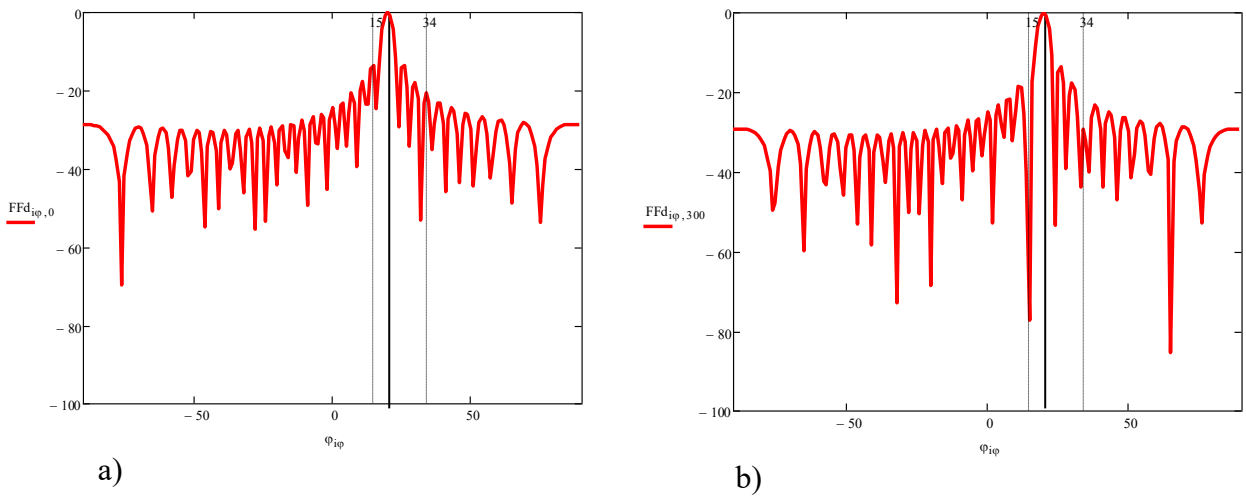
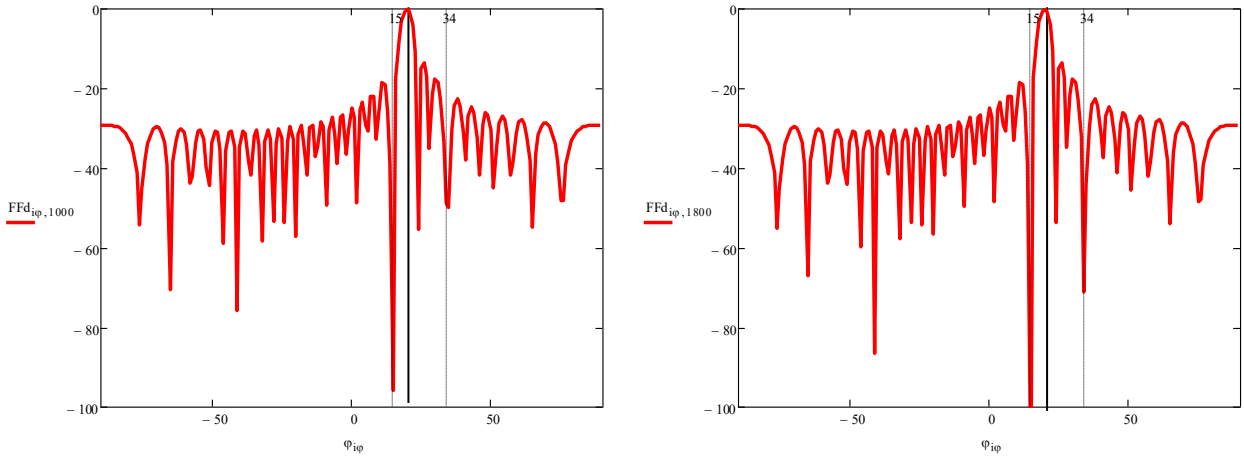



Figure 4 – Change of DN 32 element AAR in the course of adaptation (RP1/R0=1000 and RP2/R0=1000): and – the stationary mode; – on the 50th step; in – on the 150th step; – the set mode






c) d)

Figure 5 – Change of DN 32 element AAR in the course of adaptation (RP1/R0=1000 and RP2/R0=100): and – the stationary mode; – on the 300th step; in – on the 1000th step; – the set mode

1.3 Program scope

The developed program allows to simulate process of adaptation in AAR, to carry out the analysis of influence of hindrances and an arrangement of the AAR elements on the directional pattern. The submitted program is developed for application in the field of development of design of AAR.

1.4 Restrictions of use of the program

This program is calculated:

– for work under management of an operating system of Microsoft Windows family;

– on the user with basic skills of use of the software.

2. Technical specification on the program

2.1 Structure of the software product

In a basis of the program the recurrent algorithm of adaptation realizing a method of adaptive suppression of hindrances an antenna lattice of systems of space communication in stationary conditions of an alarm and interfering situation on criterion the relation a signal / (a hindrance + noise) in the established and transitional modes is put. This algorithm is presented in figure 6.

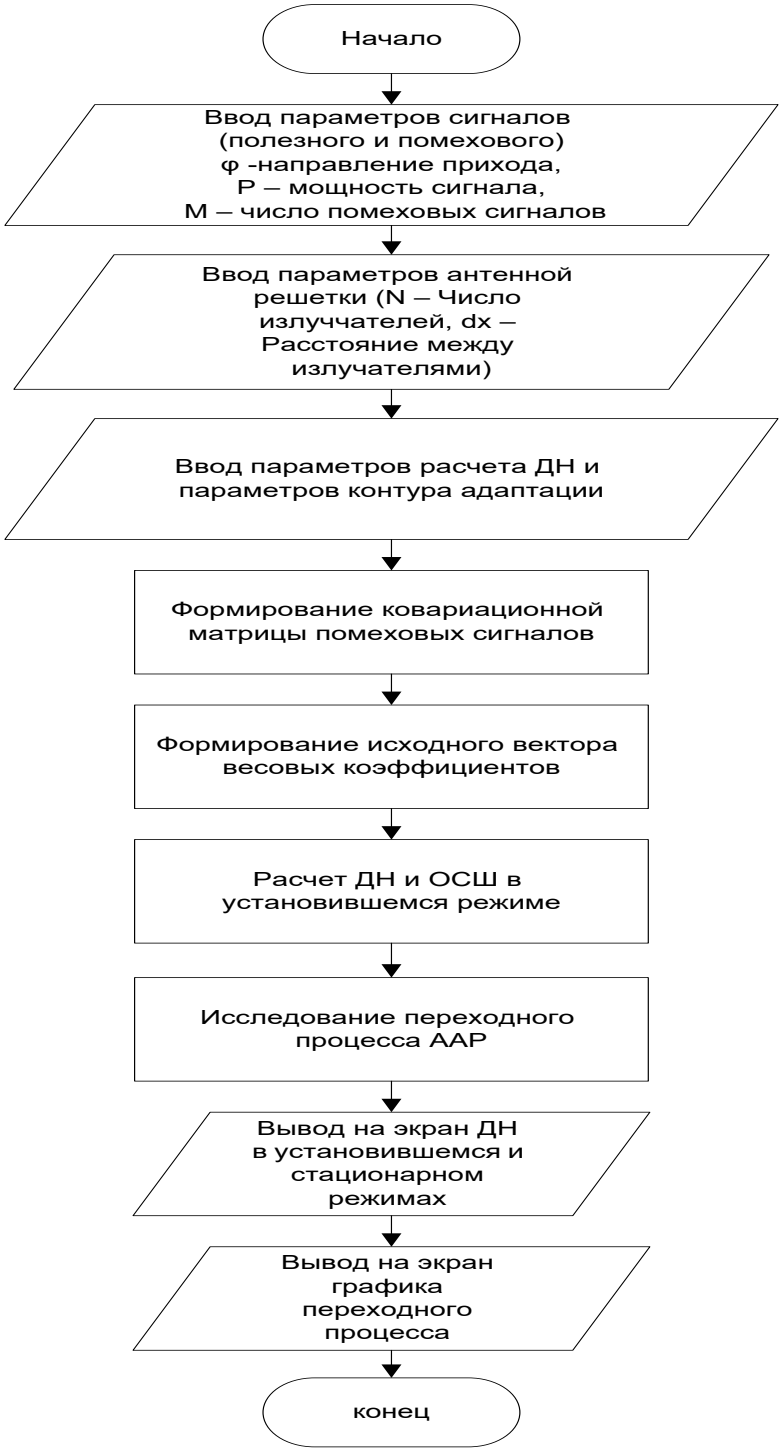



Figure 6 – Algorithm of work of the program

2.2 The applied software

For implementation of the developed program the environment of mathematical calculations Mathcad 14 is used.

2.3 Hardware requirements

For normal functioning of the program the following requirements to hardware – program part of a workplace of the user are imposed:

1. minimum:

– the Intel or AMD Single Core processor with a frequency not lower than 1 GHz;

– random access memory with a capacity not less than 1 GB;

– the integrated video adapter;

– an empty seat on the system section of the hard drive 100 Mb;

– the preset software – Mathcad;

– operating system of Microsoft Windows XP.

2. recommended:

– the Intel or AMD Dual Core processor with a frequency of 2 GHz;

– random access memory with a capacity of 4 Gb;

– the integrated video adapter;

– an empty seat on the system section of the hard drive 100 Mb;

– the preset software – Mathcad;

– Windows 10 operating system.

**3. Special conditions of application**

The program is compatible to any versions an operating system of Microsoft Windows family and the software – Mathcad.

**4. Conditions of transfer of program documentation or its sale**

The program of modeling of process of adaptation in an antenna lattice in stationary conditions is developed by staff of Military academy of communication.

Transfer of the software product to the third parties, and also educational institutions, institutions of other ministries and departments is carried out on a contractual basis and is solved directly with authors, at their written consent.

Concerning acquisition and sale of the software product to contact the address:

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Phone: 8 (981) 130-63-98

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# ADVERTISING AND TECHNICAL DESCRIPTION "Program of expeditious conducting economic activity of Auto-Service car service

*Grigor'eva O.O., Karamyshev A.N., Mahmutov I.I.*

***UDC*** *656.13:612.787*
***GRNTI*** *73.31.41*

**1. Functional purpose of a product, area of its application, its appointment**

The software product is intended for expeditious conducting economic activity of car service. It is possible to carry to the main functionality of the program:

– maintaining database of clients;
– warehouse accounting of inventory items;
– collecting statistical information and formation of reports on parameters of repairs (guarantee guarantee);
– collecting statistical information and formation of reports on malfunctions in a section of brands and spare parts;
– data storage about servicing of clients;
– formation of orders;
– automatic calculation of cost of carrying out repair.

**2. The used technical means**

The Auto-Service application was developed on a platform "1C: The enterprise 8.2", works under Windows OS.

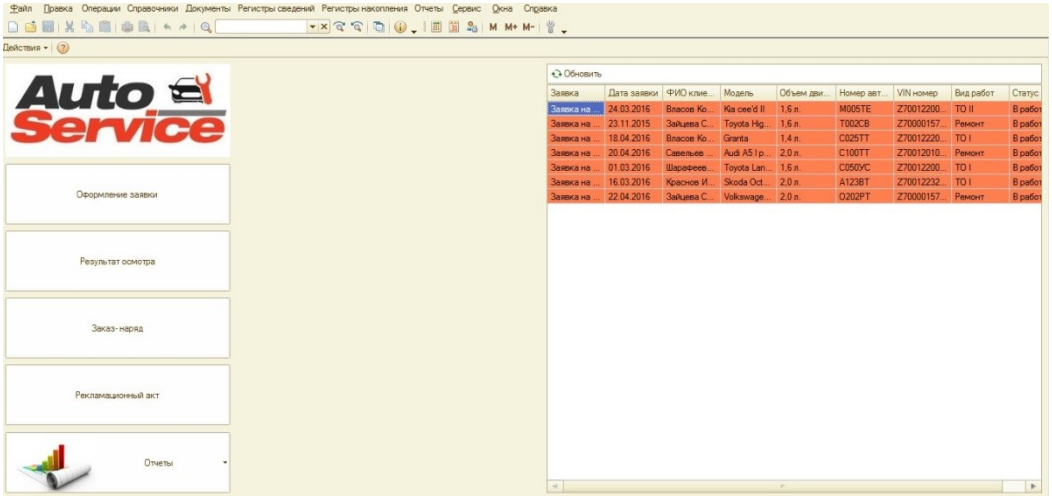
**3. Special conditions and requirements of organizational, technical and technological character**

For work with this program the recommended configuration of the computer has the following characteristics:

Computer of the end user:

– operating system: MS Windows 2000/XP/Server 2003;
– IntelPentium III processor 866 MHz;
– random access memory 256 MB are recommended;
– the hard drive (at installation about 120 MB are used);
– USB port;
– SVGA display.

The working area consists of five tabs which define sequence of their actions (fig. 1). Transition on tabs is carried out by means of pressing of PKM according to the name of a tab.



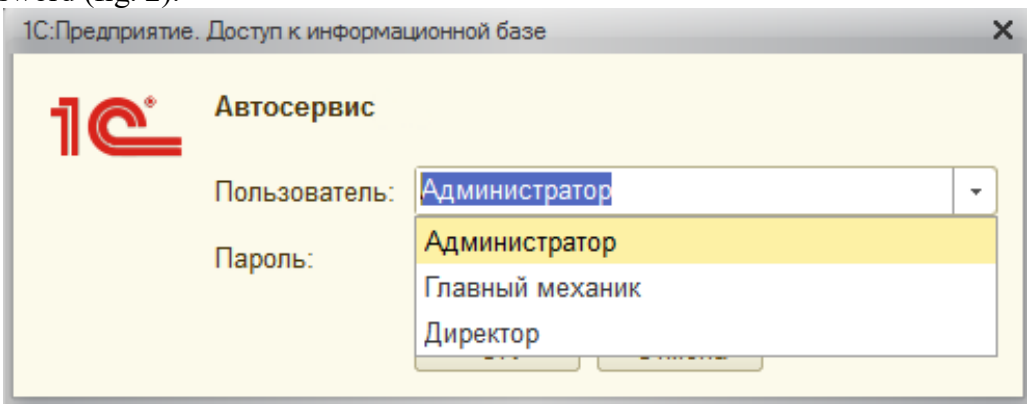

Drawing 2 - Application interface

The main tabs on the panel of information system:

– Registration of the application;
– Result of survey;
– Order;
– Damage statement;
– Reports.

On the right the table according to applications under repair is automatically formed.

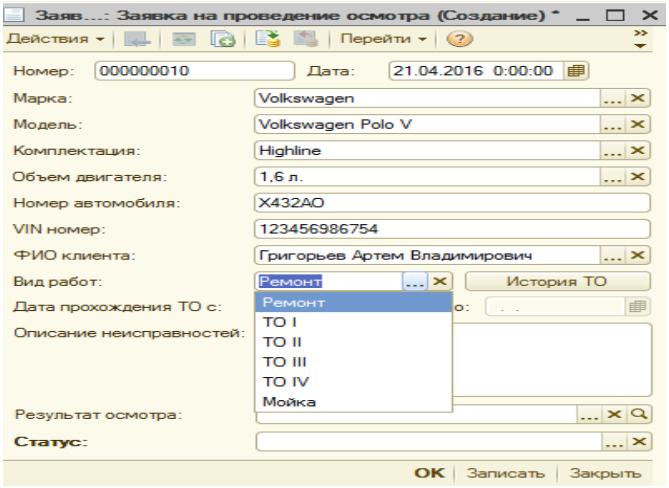
The appendix provides different access rights of users that allows to differentiate accurately sets of the actions allowed for performance. To begin to work in system it is necessary to choose the user (The administrator, the Chief mechanical engineer, the Director) and to enter the password (fig. 2).




Drawing 3 - Form of an entrance to information system

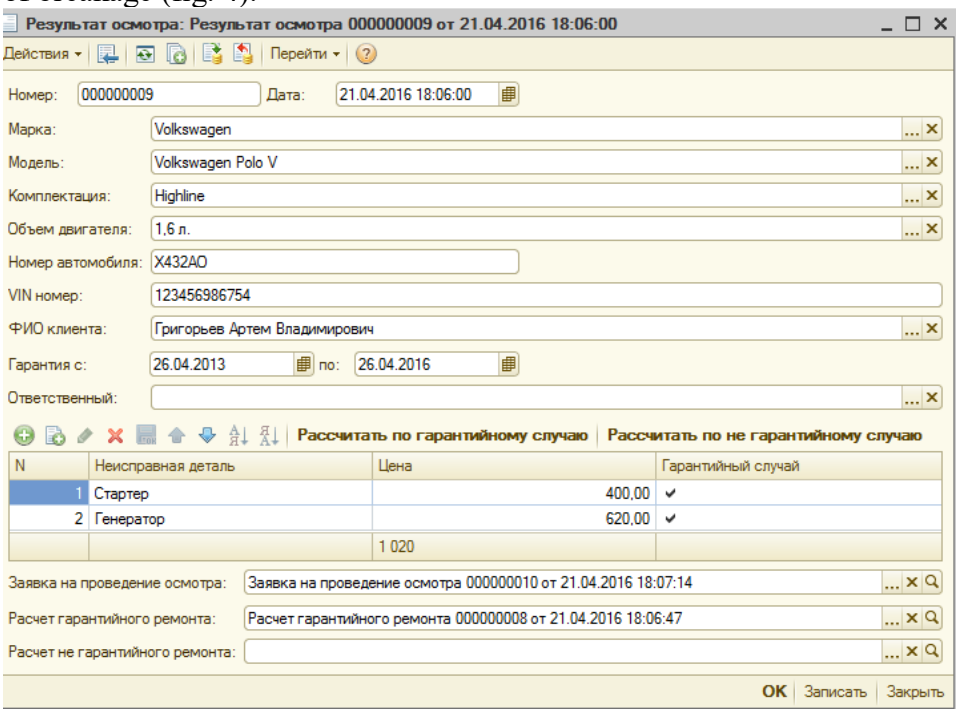
Work in the program begins with filling of the document "Application for Carrying Out Survey". In this document it is necessary to fill basic data about the client, such as brand, model and a complete set of the car, engine displacement, registration and VIN numbers of the car, and also the client's full name. The program allows to choose different types of works: THAT, Repair or Moika (fig. 3).

The operator who is making out the application has to write down all malfunctions then the order is transferred to a repair zone according to the client.



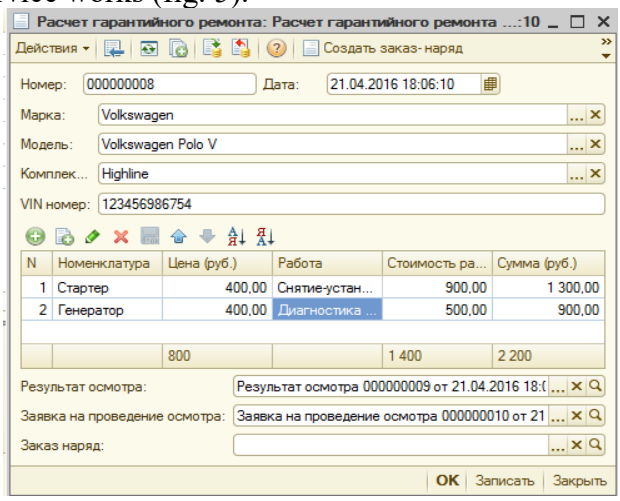

Drawing 4 - Form of the "Application for Carrying Out Survey" window

The chief engineer after survey of the car fills in the Result of Survey form where fixes faulty details whether and the program on the basis of the entered earlier these defines a guarantee case of breakage (fig. 4).



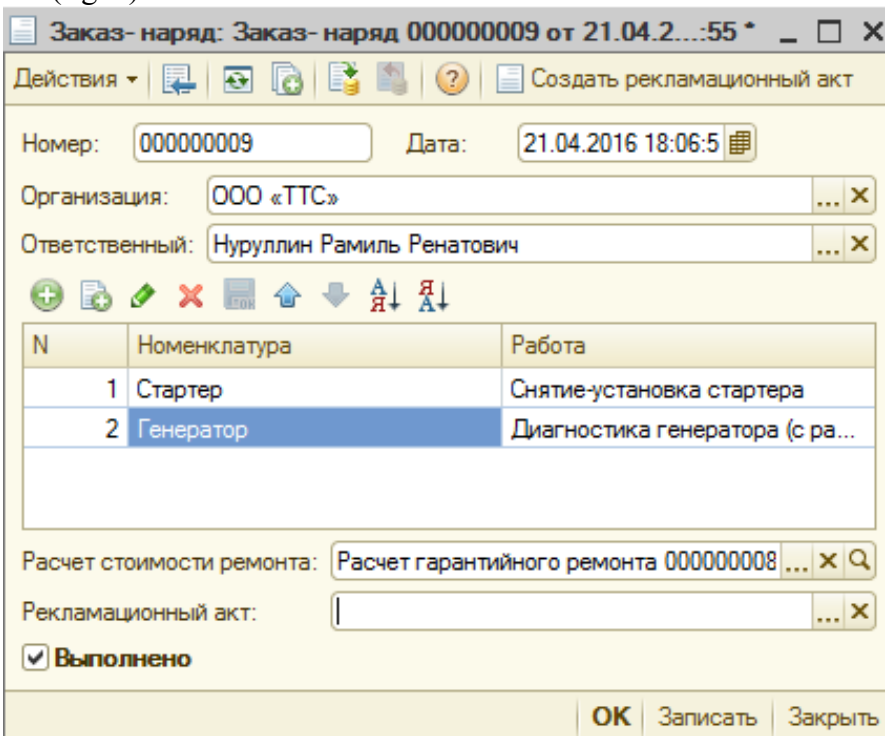

Drawing 5 - Form of the Result of Survey window

Further there is a calculation of final cost of repair taking into account the cost of spare parts and performance of service works (fig. 5).



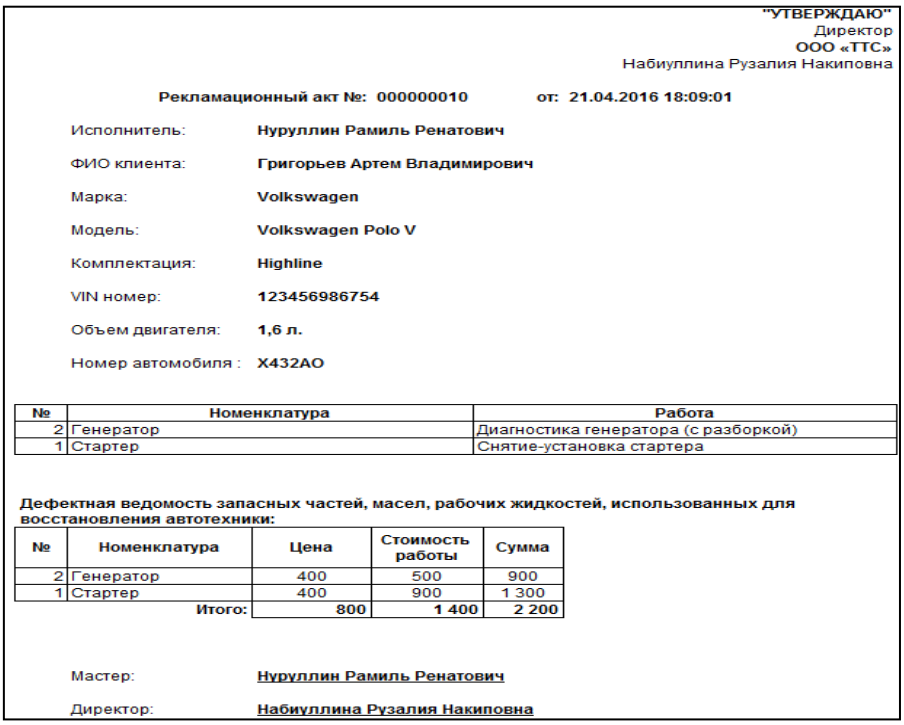
Drawing 6 - Form of the "Calculation of Guarantee Warranty Repair" window

Order for performance of the corresponding works on replacement/repair of the equipment (fig. 6).




Drawing 7 - Form of the Order window

The output document is the damage statement in which basic data of the client, and also the repair list of spare parts, oils and works on elimination of malfunctions which is certified by the press of the organization and signatures of the head and master making car repairs (fig. 7) are specified.



"УТВЕРЖДАЮ"
Директор
ООО «ТТС»
Набиуллина Рузалия Накиповна

**Рекламационный акт №: 000000010 от: 21.04.2016 18:09:01**

Исполнитель: **Нуруллин Рамиль Ренатович**

ФИО клиента: **Григорьев Артем Владимирович**

Марка: **Volkswagen**

Модель: **Volkswagen Polo V**

Комплектация: **Highline**

VIN номер: **123456986754**

Объем двигателя: **1,6 л.**

Номер автомобиля : **X432AO**

| № | Номенклатура | Работа |
|---|---|---|
| 2 | Генератор | Диагностика генератора (с разборкой) |
| 1 | Стартер | Снятие-установка стартера |

**Дефектная ведомость запасных частей, масел, рабочих жидкостей, использованных для восстановления автотехники:**

| № | Номенклатура | Цена | Стоимость работы | Сумма |
|---|---|---|---|---|
| 2 | Генератор | 400 | 500 | 900 |
| 1 | Стартер | 400 | 900 | 1 300 |
| | Итого: | 800 | 1 400 | 2 200 |

Мастер: **Нуруллин Рамиль Ренатович**

Директор: **Набиуллина Рузалия Накиповна**

Drawing 8 - Damage statement

The appendix provides accounting.

The report of malfunctions on brands is provided for maintaining statistics (fig. 8).

Отчет Неисправности по брендам

Действия | Сформировать | Конструктор настроек...

| Модель / Неисправная деталь | Цена |
|---|---|
| Volkswagen Jetta VII | 400,00 |
| Стартер | 400,00 |
| Audi A5 I рестайлинг | 620,00 |
| Генератор | 620,00 |
| Granta | 620,00 |
| Генератор | 620,00 |
| Kia cee'd II | 870,00 |
| Тормозной шланг | 250,00 |
| Генератор | 620,00 |
| Kia Optima III рестайлинг седан | 870,00 |
| Тормозной шланг | 250,00 |
| Генератор | 620,00 |
| Volkswagen Polo V | 1 020,00 |
| Стартер | 400,00 |
| Генератор | 620,00 |
| Skoda Octavia III | 2 140,00 |
| Диодный мост | 370,00 |
| Задний амортизатор | 770,00 |
| Форсунка | 1 000,00 |
| Итого | |

Drawing 9 - Report of malfunctions on brands

The report on applications shows what applications are in work and what are already finished (fig. 9).

Отчет Отчет по заявкам

Действия | Сформировать | Конструктор настроек... | Настройки...

| Статус / Ссылка | Дата | Номер | Марка | Модель | VIN номер |
|---|---|---|---|---|---|
| В работе | | | | | |
| Заявка на проведение осмотра 000000004 от 23.11.2015 15:33:08 | 23.11.2015 15:33:08 | 000000004 | Toyota | Toyota Highlander III кроссовер | Z7000015701222300 |
| Заявка на проведение осмотра 000000008 от 24.03.2016 0:56:00 | 24.03.2016 0:56:00 | 000000008 | Kia | Kia cee'd II | Z7001220045100101 |
| Заявка на проведение осмотра 000000009 от 30.03.2016 23:59:34 | 30.03.2016 23:59:34 | 000000009 | Lada (ВАЗ) | Granta | Z7001222025656666 |
| Завершен | | | | | |
| Заявка на проведение осмотра 000000002 от 09.11.2015 0:00:00 | 09.11.2015 0:00:00 | 000000002 | Kia | Kia cee'd II | Z7001220045100101 |
| Заявка на проведение осмотра 000000003 от 09.11.2015 0:00:00 | 09.11.2015 0:00:00 | 000000003 | Skoda | Skoda Octavia III | Z7000015701221100 |
| Заявка на проведение осмотра 000000001 от 09.11.2015 0:00:00 | 09.11.2015 0:00:00 | 000000001 | Lada (ВАЗ) | Granta | Z7001222025656666 |
| Заявка на проведение осмотра 000000006 от 02.12.2015 18:51:09 | 02.12.2015 18:51:09 | 000000006 | Volkswagen | Volkswagen Jetta VII | Z7000015701221500 |
| Заявка на проведение осмотра 000000007 от 14.12.2015 16:54:28 | 14.12.2015 16:54:28 | 000000007 | Audi | Audi A5 I рестайлинг | Z7000015701205410 |
| Заявка на проведение осмотра 000000010 от 21.04.2016 18:07:14 | 21.04.2016 18:07:14 | 000000010 | Volkswagen | Volkswagen Polo V | 123456986754 |

Drawing 10 - Report on applications

The report on passing THAT reflects dates of passing of servicing, and also types of works which clients besides THAT use (fig. 10).

Отчет Истрия ТО

Действия | Сформировать | Конструктор настроек... | Настройки...

Отбор: VIN номер Равно VIN номер

| ФИО клиента / VIN номер / Марка | Модель | Объем двигателя | Номер автомобиля | ТО с | ТО по | Вид работ |
|---|---|---|---|---|---|---|
| Власов Константин Викторович | | | | | | |
| Z7001220045100101 | | | | | | |
| Kia | Kia cee'd II | 1,6 л. | M005TE | 01.01.2015 | 01.01.2016 | ТО I |
| Kia | Kia cee'd II | 1,6 л. | M005TE | 01.01.2016 | 01.01.2017 | ТО II |
| Z7001222025656666 | | | | | | |
| Lada (ВАЗ) | Granta | 1,4 л. | C025TT | | | Ремонт |
| Lada (ВАЗ) | Granta | 1,4 л. | C025TT | 30.03.2016 | 30.03.2017 | ТО I |
| Галиахметова Эльвира Назаровна | | | | | | |
| Z7000015701221100 | | | | | | |
| Skoda | Skoda Octavia III | 1,6 л. | O256HE | 01.02.2015 | 01.02.2016 | ТО I |
| Григорьев Артем Владимирович | | | | | | |
| 123456986754 | | | | | | |
| Volkswagen | Volkswagen Polo V | 1,6 л. | X432AO | | | Ремонт |
| Зайцева Светлана Петровна | | | | | | |
| Z7000015701222300 | | | | | | |
| Toyota | Toyota Highlander III кроссовер | 1,6 л. | T002CB | | | Ремонт |
| Ивушкина Анна Петровна | | | | | | |
| Z7000015701221500 | | | | | | |
| Volkswagen | Volkswagen Jetta VII | 2,0 л. | O256HE | 01.03.2016 | 01.03.2017 | ТО I |
| Камнев Виктор Константинвич | | | | | | |
| Z7000015701205410 | | | | | | |
| Audi | Audi A5 I рестайлинг | 3,0 л. | У121РЕ | | | Ремонт |
| Лисин Сергей Эдуардович | | | | | | |
| Mazda | Mazda 6 III рестайлинг седан | 2,0 л. | | | | Ремонт |

Drawing 11 – Report "Passing history THAT"

The report "Indicators of implementation of the plan of deliveries" reflects the level of performance of necessary planned purchases of time (fig. 11) at the moment.

Отчет Показатели выполнения плана поставок

Действия | Сформировать | Конструктор настроек... | Настройки...

| Месяц | | | | | |
|---|---|---|---|---|---|
| Организация | Номенклатура | Единица измерения | Количество план | Количество факт | Показатель выполнения плана |
| Март 2016 г. | | | | | |
| ООО «ТТС» | Генератор | шт. | 6,000 | 5,000 | 0,666667 |
| ООО «ТТС» | Форсунка | шт. | 47,000 | 45,000 | 0,914894 |
| ООО «ТТС» | Задний амортизатор | шт. | 19,000 | 20,000 | 1,105263 |
| ООО «ТТС» | Тормозной шланг | шт. | 40,000 | 40,000 | 1 |
| ООО «ТТС» | Диодный мост | шт. | 5,000 | 5,000 | 1 |
| ООО «ТТС» | Стартер | шт. | 8,000 | 10,000 | 1,5 |
| ООО «ТТС» | Электронный блок управления | шт. | 4,000 | 5,000 | 1,5 |
| ООО «ТТС» | Тормозной цилиндр | шт. | 75,000 | 75,000 | 1 |
| Февраль 2016 г. | | | | | |
| ООО «ТТС» | Тормозной шланг | шт. | 30,000 | 25,000 | 0,666667 |
| ООО «ТТС» | Диодный мост | шт. | 140,000 | 140,000 | 1 |
| ООО «ТТС» | Стартер | шт. | 50,000 | 50,000 | 1 |
| ООО «ТТС» | Электронный блок управления | шт. | 10,000 | 10,000 | 1 |
| ООО «ТТС» | Тормозной цилиндр | шт. | 20,000 | 25,000 | 1,5 |
| ООО «ТТС» | Генератор | шт. | 21,000 | 20,000 | 0,904762 |
| ООО «ТТС» | Форсунка | шт. | 40,000 | 40,000 | 1 |
| ООО «ТТС» | Задний амортизатор | шт. | 10,000 | 10,000 | 1 |
| Январь 2016 г. | | | | | |
| ООО «ТТС» | Диодный мост | шт. | 5,000 | 6,000 | 1,4 |
| ООО «ТТС» | Стартер | шт. | 70,000 | 70,000 | 1 |
| ООО «ТТС» | Электронный блок управления | шт. | 10,000 | 10,000 | 1 |
| ООО «ТТС» | Тормозной цилиндр | шт. | 35,000 | 40,000 | 1,285714 |
| ООО «ТТС» | Генератор | шт. | 26,000 | 25,000 | 0,923077 |
| ООО «ТТС» | Форсунка | шт. | 45,000 | 40,000 | 0,777778 |
| ООО «ТТС» | Задний амортизатор | шт. | 35,000 | 35,000 | 1 |
| ООО «ТТС» | Тормозной шланг | шт. | 20,000 | 20,000 | 1 |

Drawing 12 - Report "Indicators of implementation of the plan of deliveries"

The report on the remains of spare parts in a warehouse is intended for the analysis of the remains of products in a warehouse. By means of this module it is possible to estimate quickly requirements and level of warehouse stocks (fig. 12).

Отчет Склад запасных частей

Действия | Сформировать

| Номенклатура | | |
|---|---|---|
| Склад | Единица измерения | Количество Остаток |
| Генератор | | |
| Основной | шт. | 44,000 |
| Диодный мост | | |
| Основной | шт. | 55,000 |
| Задний амортизатор | | |
| Основной | шт. | 105,000 |
| Стартер | | |
| Основной | шт. | 16,000 |
| Тормозной цилиндр | | |
| Основной | шт. | 125,000 |
| Тормозной шланг | | |
| Основной | шт. | 180,000 |
| Форсунка | | |
| Основной | шт. | 145,000 |
| Электронный блок управления | | |
| Основной | шт. | 20,000 |

Drawing 13 - Report "Warehouse of spare parts"

**4. Conditions of transfer of documentation or its sale**

Transfer and use of the software product it is possible only at coordination with authors of development.

E-mail: antonkar2005@yandex.ru

# ADVERTISING AND TECHNICAL DESCRIPTION "Database of Results of Complex Beam Research of a Spine Column of 127 Women of Various Age"

*Volkov A.A.*

***UDC** 616.7*
***GRNTI** 76.29.40*

**1. Functional purpose of a program complex, area of its application, its restriction.**

Dystrophic changes of bone structure of bodies of vertebras, intervertebral disks, copular and articulate devices of a spine column are, as a rule, noted in various and natural combinations, representing the most widespread pathological changes of a skeleton.

Violation of remodeling of a bone tissue during the osteosinging and osteoporosis, the most widespread metabolic disease, exerts impact on all parties of exchange processes of a bone and, therefore, involves changes of displays of other diseases of a skeleton including dystrophic defeats of intervertebral disks and a forward longitudinal sheaf. The X-ray diagnostic signs peculiar for osteochondrosis, a spondiloza in the conditions of metabolic changes owing to decrease in mineral density are shown atypically, not in full or in other combination that inevitably has to change a traditional clinical and x-ray picture of diseases.

For determination of nature of dystrophic changes of a spine column in a combination to decrease in mineral density of a bone results of complex x-ray research of 127 women of various age examined on the basis of the Yaroslavl regional clinical hospital during 2008-09 concerning the diseases which are not connected with decrease in mineral density of a bone were studied.

By results of absorbtsiometrichesky and X-ray diagnostic researches, from the general structure of surveyed three groups of patients were created: depending on the size of mineral density of a bone of spongy tissue of bodies of lumbar vertebras, depending on expressiveness of x-ray displays of osteochondrosis of a backbone and in connection with X-ray diagnostic signs of dystrophic changes of a forward longitudinal sheaf taking into account degree of their expressiveness.

**2. The used technical means**

For studying of the mineral density of a bone (MDB) it was carried out standard absorbtsiometrichesky research of lumbar department of a spine column in the form of a quantitative x-ray computer tomography on the computer Somatom tomograph of General Elektrik firm.

By means of the analytical program data on the bone density of bodies of lumbar vertebras of L2, 3, 4 in mg/mm3 were formed.

The received data on bone weight were compared with its size normal at young age, at height of accumulation of mineral density (T an index), and in the relevant age groups (Z – an index).

In the analysis of results of an absorbtsiometriya a number of the indicators characterizing features of a quantitative and qualitative condition of mineral density of a bone was considered.

The first group of indicators submits data on the total average bone mass of spongy tissue of three lumbar vertebras:

- the average mineral density of spongy tissue of bodies of three lumbar vertebras in mg/mm3.
- the average standard deviation of density of spongy tissue of bodies of vertebras in mg/mm3 characterizing the average range of density of spongy fabric in a measurement zone. Besides, this indicator was presented in the form of the maximum value of bone weight in mg/mm3, its minimum size in mg/mm3, and also distinction of these sizes in mg/mm3.

The second group of the studied parameters of a condition of a bone tissue submits similar data on a kortikalny bone of bodies of the studied vertebras:

The third group of indicators has comparative character due to comparison of the parameters given above characterizing a condition of a spongy and kortikalny bone:

- the average kortikalno-spongy distinction defined in mg/mm3
- average kortikalno-spongy index – the relation of bone mass of a kortikalny and spongy bone.

The fourth group of parameters has integrated value due to comparison of the revealed bone weight to its average size normal at young age - T-criterion (T) and taking into account age - Z-criterion (Z)

Besides, indicators similar to the general data were received for each of three bodies of vertebras separately.

X-ray diagnostic and X-ray morphometric researches it was carried out by results of the lateral spondilografiya of chest and lumbar departments executed with observance of a number of the rules promoting their standardization.

X-ray morphometric research of a spine column was conducted in the range from T4 to L4 by the conventional technique with an assessment of lobbies (A)), average (M) and back (R) the sizes of bodies of vertebras and their relations – indexes of bodies (A\R) – the relation of size of a first line of a body to its back sizes, (M\R) – the relation of size of average departments to the sizes of the rear edge of a body of a vertebra and "back and back" (P\Pn) – the relation of the actual sizes of the rear edge of a body to its size is normal. The received values of indexes were compared with their size in population norm, and the revealed deviations were defined in standard deviations (SD) (1SD - 0,05).

Besides, for identification of initial and small deformations of bodies of vertebras the technique of the additional analysis of the bodies of vertebras given to a X-ray morphometry was used:

- the index of distinctions of the sizes of vertebras characterizing the minimum deformations - average distinction of the sizes of bodies of vertebras in the range from T7 to T11,
- the symptom of "alignment" of the sizes of bodies of vertebras based on identification of cases of equality of the sizes of the next bodies, characterizing more expressed deformation changes
- the symptom of the maximum distinctions of the sizes of vertebras characterizing the expressed distinctions of the sizes of the next bodies due to deformation changes
- the symptom of "the paradoxical sizes" revealed in cases when the sizes of an underlying body of a vertebra were less, than at the vertebra which is above.

In addition, on the basis of the data obtained at a classical x-ray morphometry in millimeters width of forward, average and back departments of thirteen intervertebral spaces in the range of a spine column from the T4-T5 segment to L4-L5 was defined. The obtained data were analyzed with an assessment of the sizes and forms of intervertebral spaces.

The X-ray diagnostic testing of a spine column was conducted by means of the semi-quantitative techniques allowing to record at the visual and partially quantitative level in points the main X-ray diagnostic symptoms of changes of a backbone characteristic of dystrophic changes of bone structure, intervertebral disks, a forward longitudinal sheaf taking into account degree and prevalence of pathological changes. The assessment of 0 points testified to lack of the corresponding manifestations, the maximum assessment of 6 points characterized the most expressed and widespread changes of this sort.

Statistical processing of the obtained data was carried out by means of the Microsoft Office programs.

**3. Special conditions of application and requirement of organizational, technical and technological character**

Are not available

**4. Conditions of transfer of documentation on development or its sale**

Transfer of materials of research for their use in any purposes happens from the written consent of the author.

## ADVERTISING AND TECHNICAL DESCRIPTION "Enciphering of Text Files of Steganografiya of V1.0" Program

*Federal public budgetary educational institution of the higher education "Omsk state technical university"*

*Zlatkina A.A., SHCHyogoleva A.S.*

*UDC 004.056.5*
*GRNTI 81.93.29*

**1. Functional purpose of a product, scope, its appointment**

The developed program model of enciphering of text files Steganografiya is intended for transfer of the confidential message so that contents of the message and the fact of its transfer were hidden from all, except interested persons. An opportunity to hide the text file in the multimedia file is provided in the program: the image or the sound file by means of steganografiya methods.

Feature of application of the program of Steganografiya is usability at the expense of the friendly user interface, and also reliability of saving the hidden information due to application of methods of a steganografiya.

In algorithm of the program of Steganografiya the method of replacement of the least significant bits (Least Significant Bits-LSB) is used. The idea of a method consists in replacement from one to four younger bits in bytes of color representation a point of the initial image in bits of the hidden message.

For the solution of a task of the organization of transfer of the classified information some message called by the container (stego-container) which the confidential message demanded for transfer is built in is used. In practice, in most cases the open container does not contain useless data which can be used for modification of LSB. Instead container files naturally contain various levels of "noise" at the level of LSB which on closer examination, except for other part of byte, can be any size. The program uses as the container of the image of the *.bmp format and sound files of the *.wav format. For a steganografiya files of formats in which compression methods without loss are used are most preferable. Also as argument the choice of the *.bmp format is supported by high quality of the image and simplicity of a format. From a steganografiya position files of the *.bmp and *.wav formats allow to hide rather large volumes of information.

The sound (.WAV) file, for example, contains mostly inaudible noise of a background at the level of LSB; the 8-bit graphic file will contain insignificant distinctions of color at the level of LSB while the 24-bit image will contain changes of color which are almost imperceptible to a human eye

Work of the program begins with a window of the input of initial files allowing to choose further the file for enciphering, or to take (to decipher) the message from the image or the sound file. The window of the program has an appearance according to figure 1.

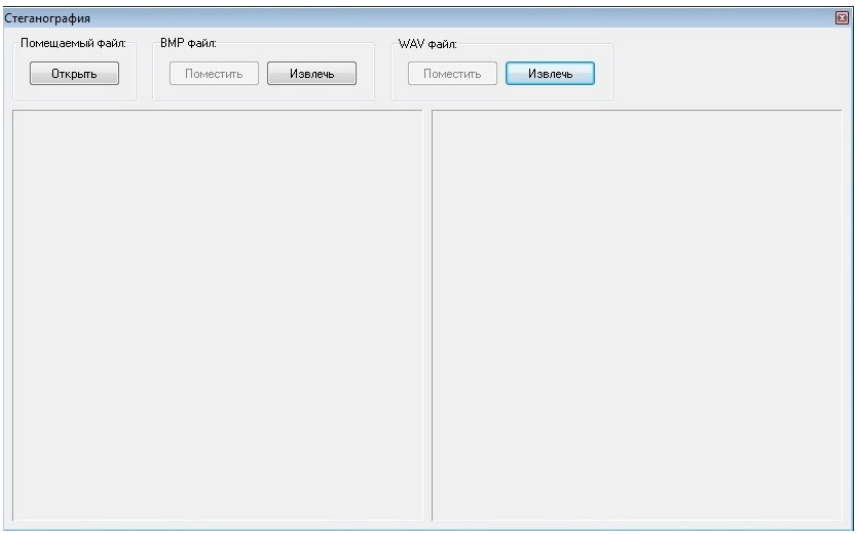



Figure 1 – a window of input of basic data

Having pressed the Open button to the user it is offered to choose the file containing the confidential message which will need to be hidden further. After the choice of the file with the message the user is offered to choose the BPM file or the WAV file for their use as the container for concealment of information. The window of the program takes a form according to figure 2 (the Place buttons become active).

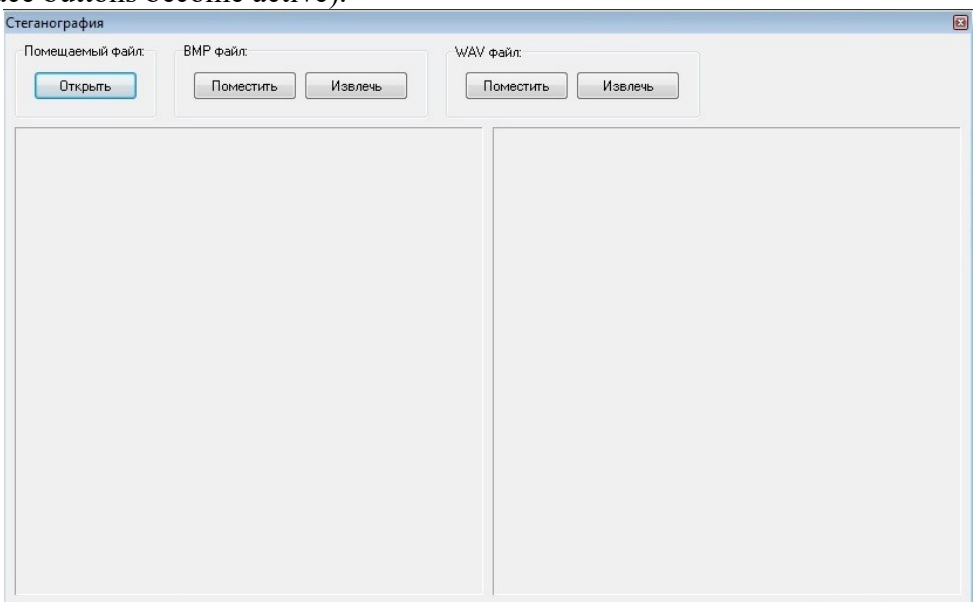



Figure 2 – A program window after the choice of the file with the message

The user can choose like the file, having pressed the corresponding buttons. Further the user is offered to choose directly the BMP or WAV file.

Right after the choice of the multimedia file the user is offered to choose a name and a way of saving the file which turned out as a result of enciphering.

In case the user chooses the BMP file, after generation of the confidential message ciphered in the file, in a window of the program images before and after the room in it the hidden information according to figure 3 are displayed.

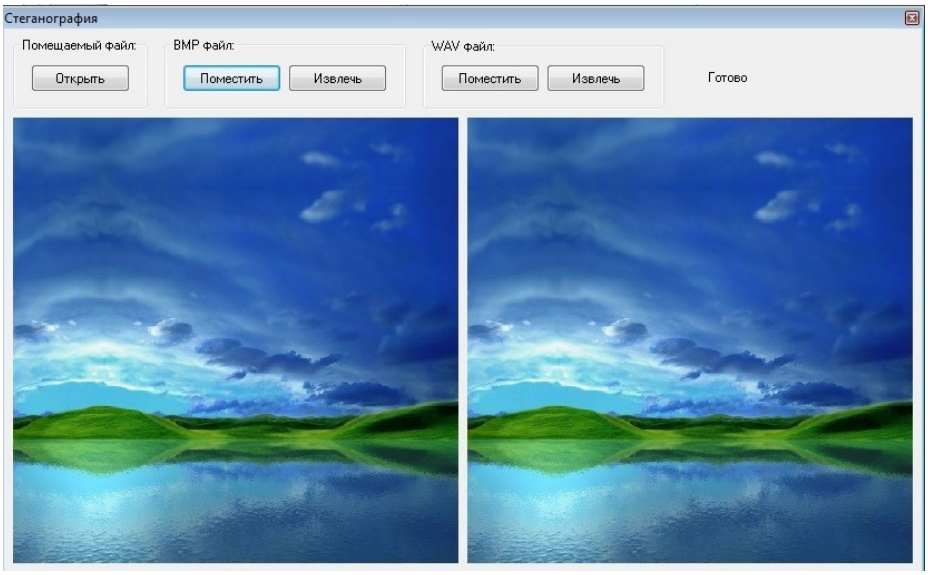



Figure 3 – A program window after the room of the confidential message in the file with the image

The file size after the room of information in it remains the same. Quality of a sound or the picture of files with information placed in them remains the same.

Further the user can take information from the file, having pressed the corresponding Take keys. The user is offered to choose the file from which it is necessary to take information, then a name of the file and a way for saving the taken file. Besides, the user can choose the file from which it is necessary to take information, at an initial window of the program, before the choice of the file with the confidential message.

In attempt to take information from the file which is not containing the hidden information, the program gives the system message (in case of the BMP file): "The image is not the container!". The program window at the same time has an appearance according to figure 4. In attempt to take information from the sound file, the system message appears: "The audio is not the container!".

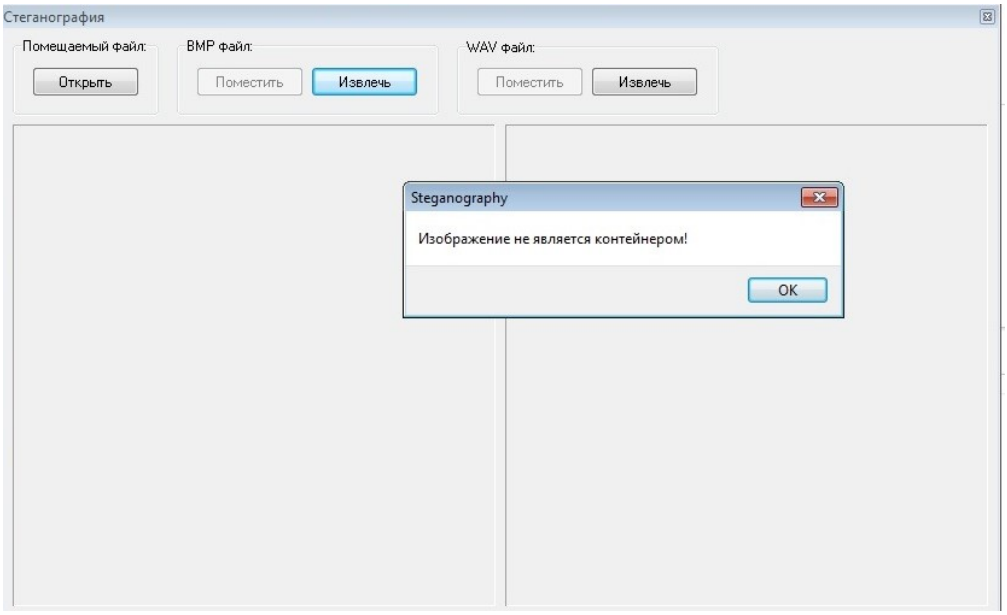



Figure 4 – The system message in attempt to take the hidden information

The developed program is directed to the solution of a problem of concealment of information and can be applied in various spheres of activity.

Today steganosistema are actively used for the solution of the following key tasks:

- protection of confidential information against unauthorized access;
- protection against copying;

- hidden summary of documents;
- protection of copyright of intellectual property;
- transfer of the ciphered information at a ban of use of methods of cryptography.

**2. The used technical means**

For work with the program it is necessary to have the personal computer possessing the following technical characteristics: Windows XP/Vista/7 or similar, Pentium of 1 GHz and above, 500 MB of the RAM above, 712 KB of free space on the hard drive, the video card of the budgetary level (including integrated for laptops), CD/DVD-ROM, a mouse.

Existence of the following software is required: notebook, standard browser of the image (for example, Microsoft Picture Manager), program of reproduction of sound files (for example, Windows Media player), CodeGear RAD Studio development environment.

**3. Special conditions of application and requirement of organizational, technical and technological character**

No.

**4. Conditions of transfer of documentation or its sale**

The program and documentation to it can be transferred to the interested person or the organization on the basis of the contract with OMGTU and authors according to the current legislation

## ADVERTISING AND TECHNICAL DESCRIPTION "The Electronic Manual on Discipline "Jurisprudence" (the Direction — Nonlegal Preparation)"

*Sterlitamak branch of Federal public budgetary educational institution of the higher education "Bashkir state university"*

*CHernova EH.R.*

***UDC** 378*

***GRNTI** 14.35.07, 10.01.45*

**1. Functional purpose of a product, scope, its appointment**

Now an integral part of a technique of teaching discipline of "Jurisprudence" are the information technologies using a wide range of educational IT resources. Quality of modern education is directly connected with improvement of technologies and methods of training that in turn in many respects depends on application in educational process of electronic manuals. It is one of the regularities characterizing modern teaching and educational process during an era of informatization of society which puts new problems before an education system and education of younger generation.

The electronic manual on discipline "Jurisprudence" has great practical value. Its use in educational process allows to study more deeply material, to get acquainted in more detail with the interesting or difficult subjects. When using electronic manuals there is not only a reproductive activity trained, but also abstract and logical that promotes the best understanding and assimilation of a training material.The fact that students have an opportunity both at lecture, and on a practical training is very important, and in the course of independent work to use the same electronic resource which use in educational process forms a complete image of the studied subject.

The discipline "Jurisprudence" is included into a basic unit of an educational humanitarian, social and economic cycle of disciplines of the Federal state educational standard of higher education in the directions of preparation of a nonlegal profile. The knowledge, skills received during studying of discipline have to be used by students comprehensively: at all grade

levels in higher education institution; during further training in a magistracy; in the course of the follow-up professional activity at the solution of the tasks demanding application of actual legal information.

The discipline "Jurisprudence" is organic part of the system of disciplines of a social and humanitarian profile laying the foundation for legal socialization of the personality, development of civil activity and responsibility of the person. Valuable and standard nature of the right causes value of the given discipline for formation by the student of own system of social values, development of the qualities and skills allowing to realize, defend and protect these values. Recognition of value of human rights, understanding of the rights and rights of the third parties, ability to realize them and to protect. Studying of fundamentals of law promotes instilling in students of legal and political culture, respect for the law and careful attitude to social values of the constitutional state, honor and dignity of the citizen.

The software product contains all main materials in a subject. The edition includes the structured material:

Introduction

Methodical instructions

The main section on course subjects

In the subjects provided by the program the main issues to which students should pay attention first of all are allocated. The program of a course gives access to actual problems of the modern Russian legislation and receiving a necessary legal minimum for future professional activity. The attention is focused on the main branches of system of the right (constitutional, administrative, civil, labor, family, criminal).

In the manual are stated the recommendation as the general character, and in relation to concrete subjects. Each subject of a subject matter contain the basic abstracts of lectures containing basic provisions, questions. The most typical tasks of the course "Jurisprudence" and tests for carrying out intermediate certification, control questions for self-examination, the approximate questions submitted for offsets and examinations, and also normative legal acts and literature for independent studying by students are given.

Manual development stages on discipline "Jurisprudence"

1) inspection of object and justification of need of creation of the manual on discipline "Jurisprudence";

2) systematization of a training material;

3) creation of the hypertext version of the manual on discipline "Jurisprudence" on the basis of the HTML language;

4) studying of the existing analogs of the electronic manual on discipline "Jurisprudence";

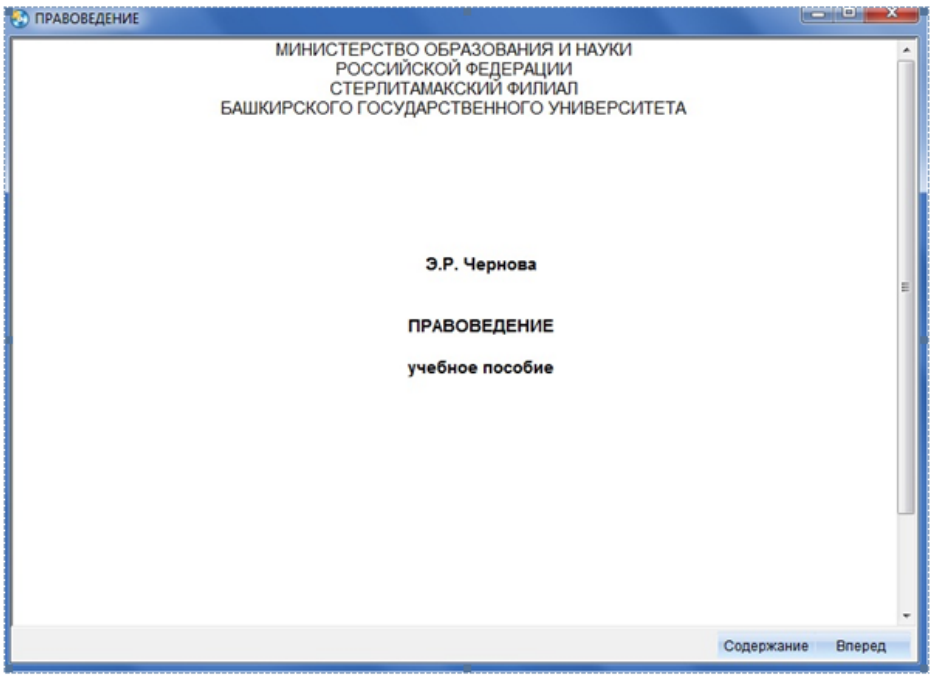
5) creation of objects of interactive virtual demonstration installations, development of design means of computer graphics;

6) development of the ergonomic, comfortable interface of the user, by means of the software of AutoPlay Media Studio 8.0.7.0.

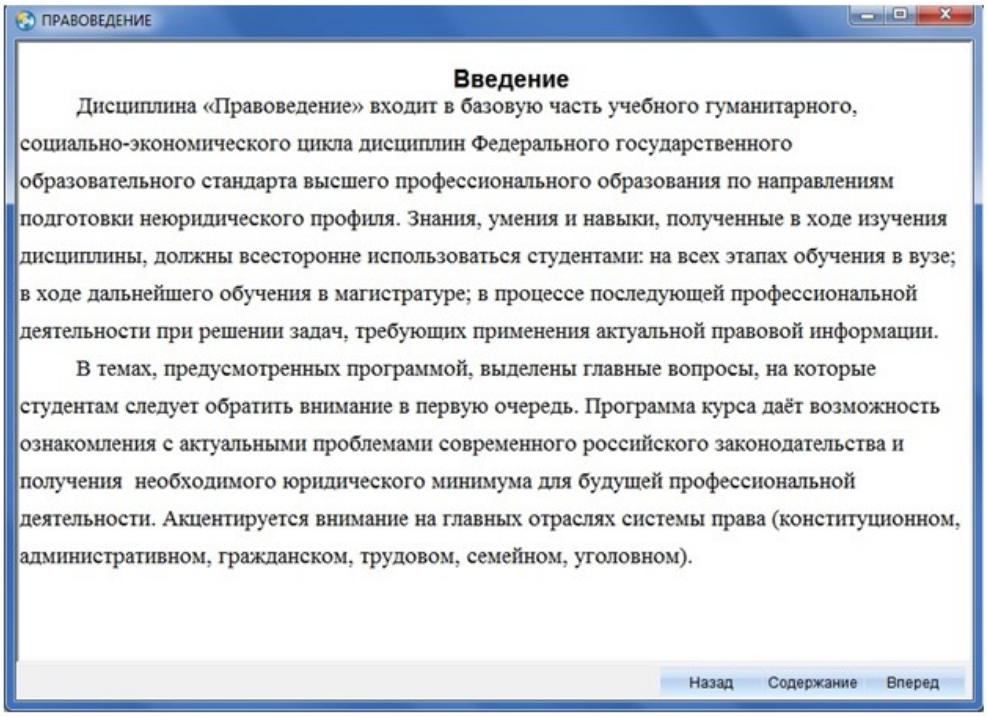
The user interface provides comfortable interaction of the user with the software product. The interface of system is clear and convenient in use, conforms to modern ergonomic requirements.

Screenshots of the electronic manual on discipline "Jurisprudence" are given below

1




2




**2. The used technical means**

The manual on discipline "Jurisprudence" is created with use of the software of AutoPlay Media Studio of version 8.0.7.0.

Text information is created when using the Microsoft Office package 2007.

The manual on discipline "Jurisprudence" can be used both at independent studying of disciplines, and on occupation under the leadership of the teacher when studying material.

**3. Special conditions and requirements organizational, technical and technological character**

"Jurisprudence" belongs to necessary conditions of application of the electronic manual on discipline: existence of the Intel Pentium computer above; 20 Mb of free disk space; Windows XP OS above; software of Flash Player of version 8.0 above.

**4. Conditions of transfer of documentation or its sale.**

Condition of transfer of this software product is the contract of purchase and sale signed between the Sterlitamak branch of the Bashkir state university and interested party.

## ADVERTISING AND TECHNICAL DESCRIPTION "Software" the automated information system of record of citizens on reception to the district police officer"

*Sterlitamak branch VO Bashkirsky Public Educational Institution state university*
*Sulyaev R.S., Boltachev EH.F., Nafikova A.R.*

***UDC*** *004.42*
***GRNTI*** *50.01.85, 50.05.13, 20.23.17, 20.23.21*

**1. Functional purpose of a product, area of its application, its appointment**

Now the dominating kind of activity in the conditions of universal informatization is collecting, accumulation, processing, transfer and use of information which purpose consists in simplification and automation of processes.

In the conditions of the current level of development of information technologies, an opportunity to use modern ways of an exchange, transfers and storages of information will allow to come to qualitatively new level of development of the relations, increasing thereby working capacity.

Let's consider structural elements of the information system allowing to automate process of record to the district police officer (DPO). From features it should be noted that dialogue between the parties will take place at interrelation of the client-server web application and the application created on the Android operating system.

Creation of a client-server web application directly begins with design and creation of the database in which all flow of information will be served. Correctly to define subject domain of future database, it is necessary to create tasks and functions which will be carried out by information system:

1. Possibilities of users:
- *addition of the application for consideration;*
- *assessment of actions of UUP;*
- *definition of location of the local point of police (LPP);*

2. Possibilities of UUP:
- *change of a condition of the application;*
- *addition of the comment to the application;*

3. possibilities of the database manager:
- *assignment of UUP for concrete UPP;*
- *addition and removal of entries in tables;*
- *removal of applications of users;*
- *viewing of statistics of use of information system.*

Proceeding from certain functions, the relational database (fig. 1) was designed and constructed in MySQL DBMS.

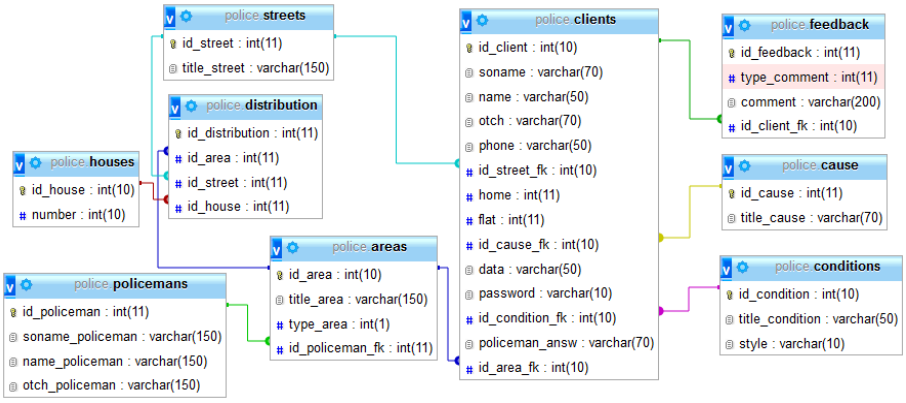



Fig. 1. Model of the relational database

Better to understand the principle of work of this information system, it is necessary to consider its block diagram (fig. 2) step by step. It should be noted that the database takes the key place in information system. All possible operations go to the server in the form of inquiries of different types (synchronous or asynchronous) then in base there is a work with data by means of the structured language of inquiries (SQL) and goes back as the answer to the user.

The AJAX inquiries which are used directly in information system are remarkable approach which helps to transform heavy interfaces to interactive web applications due to use of background requests to the server.

In habitual until recently classical model of creation of a web application in response to request of the browser the server generated absolutely new web page and sent it back. Then the browser completely rebooted all page. From this the following actual features of use of AJAX inquiries follow:

1) essential acceleration of loading of N of updating of pages;

2) reduction of load of the server.

Fig. 2. Block diagram of information system

1. From a client form primary flow of information on the user and character of the application comes to base. At input of the name of the street and house number, without sending data with a form to the server, through background inquiry the user obtains data on UPP (fig. 3). After sending a form for the server the password of access to the list of applications for safety at authorization of users is generated.

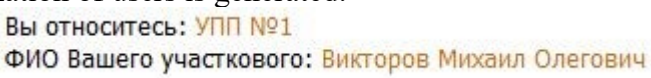



Fig. 3. Definition of UPP

2. A basic element of all information system – the list of applications (fig. 4). The authorized user has an opportunity to check all applications left earlier, to check the status current, and also to make removal of all excess information.

At the time of registration all applications have the status: "Is not processed" and only after consideration the district police officer makes the decision on expediency of this action.

After visit of UPP the user is given an opportunity to leave a comment: positive or negative. The opinion on system will be used for carrying out the analysis of quality of work, both the certain district police officer, and all information system in general.

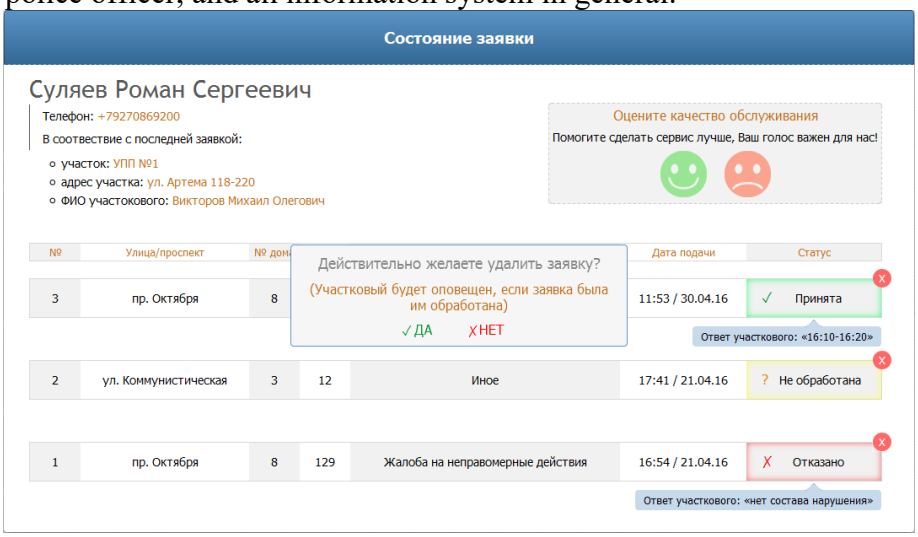



Fig. 4. Web application GUI

3. The panel of the administrator is developed for entering of changes into structure of the database. Need is caused, first of all, by convenience of work with base to unskilled personnel, and also for data security provision of all system. From opportunities there is a redistribution of structure of UPP for creation of flexibility and improvement of productivity in connection with temporary changes of factors.

Besides direct instruments of editing the database the analysis package enters the panel, that is there is an opportunity to trace responses of users, and also daily attendance of information system.

4. The application created on the basis of the Android operating system is created especially for expeditious change and distribution of the arriving applications of users. Through an identification key district police officers will acquire a limited right of use of this appendix. The arriving applications being in base will be read out and displayed the smartphone in a calendar format, and the district police officer will be able automatically to distribute the raw applications on time. Convenience, first of all, consists in autonomy from the computer, and, therefore, and in optimization of work of UUP.

Thus, use of the automated system of record of citizens will allow to reduce by reception significantly the expenses connected with access to the district police officer of police and also to increase productivity, quality and volume of work.

**2. The used technical means**

The mobile application is developed in the environment of Android Studio. The database is developed in MySQL DBMS.

**3. Special conditions and requirements of organizational, technical and technological character**

The software functions in an operational environment of Windows*. Extends on any carrier.

**4. Conditions of transfer of documentation or its sale**

Condition of transfer of this software product is the contract of purchase and sale signed between the Sterlitamak branch of the Bashkir state university and interested party. Interested persons for obtaining more detailed information can send the inquiries to the address: E-mail: albinabikbaeva@gmail.com.

## ADVERTISING AND TECHNICAL DESCRIPTION "The Software for Detection of Dependences of Factors of a Criminogenic Situation"

*Sterlitamak branch VO Bashkirsky Public Educational Institution state university*
*Akchulpanova R.T., Boltachev EH.F., Nafikova A.R.*

***UDC** 004.42*
***GRNTI** 50.01.85, 50.05.13, 20.23.17, 20.23.21*

### 1. Functional purpose of a product, area of its application, its appointment

When studying regularities of dependence of factors of a criminogenic situation it is necessary to consider a difficult interlacing of a set of factors. Now use of mathematical methods allows not only to establish the fact of existence of such dependence, but also to reveal strongly, moderately and poorly dependent factors by means of one-factorial regression model.

Existence of dependence at influence of factors is expressed in change of indicators over time that can be the cause of their instability when developing one-factorial regression model according to the data taken for a certain period and in comparison of the received results.

The main advantage of one-factorial model of the analysis of data is an opportunity to explain dependence between the phenomena, and is the mathematical statistics which is the most developed in the theory. Such model of data allows to estimate dependence between the phenomena and to receive the indicator called by correlation coefficient. Noted advantages of one-factorial model allow to carry out the analysis and to reveal the factors exerting impact on a criminogenic situation for a certain period of time.

As initial information for creation of one-factorial regression model of a criminogenic situation data on economic and social situation and offenses served in the city of Sterlitamak during 2004-2014. The analysis allows to reveal regularity of formation of dependences of the studied indicators on the factors exerting impact at the expense of time and change of indicators. At detection of these dependences 64 factors of economic and social situation capable to exert impact on a criminogenic situation were considered.

At the first stage at creation of correlation dependence between sets $Y$, containing information on offenses, and $X$, containing information on economic and social situation, selection of factors is made $x_i \in X\,(i=\overline{1,64})$, the most influencing size $y_j \in Y\,(j=\overline{1,11})$ at significance values α = (0,3; 0,5; 0,7) for identification of a multicollinearity for each type of an offense with each indicator of economic and social situation.

The received values of coefficient of correlation show that not all equations of regression are significant as some values do not reach to chosen as us α. Further quality of the received results by means of Styyudent's *t-criterion* of all models was estimated, comparing them to tabular value. Some indicators exceeded this value that demonstrates that the chosen regression models in general rather well reflect dependence of a criminogenic situation on the chosen social factors for 2004-2014.

Over time allowed to reveal the analysis of influence of dependence of social factors on a criminogenic situation taking into account features of change of each considered factor most strongly, moderately or poorly dependent factors.

During the conducted research the software was developed for the analysis and detection of dependences in a criminogenic situation of the city of Sterlitamak. This software automates process of detection of correlation dependence between offenses and social factors, for the purpose of providing data on regularities in the environment of a criminogenic situation of the city of Sterlitamak. The greatest interest of the developed software can be caused from persons, making the decision in the sphere of law-enforcement activity as it allows to reveal in the dynamic mode of the arriving basic data the hidden tendencies in the criminal environment.

This software is developed in the environment of visual programming of Delphi. For loading of basic data, calculation of formulas and a conclusion of final information on the computer the standard applied Microsoft Excel package has to be installed. It is necessary to develop such software which would provide to the user rather convenient and intuitively clear interface, and also had an opportunity to specify a way to the chosen file for processing of entrance data with application *of t-criterion* of Styyudent and at desire to write down the received result in the file containing the analysis of dependence of the chosen factors on a criminogenic situation.

Entrance data on economic and social situation and offense are presented in the Microsoft Excel file. The developed software makes reading of all available indicators of the considered sets $X$ and $Y$.

At start of the software the window containing (fig. 1) is displayed:

- the StringGrid component into which basic data are directly loaded are processed by means of Styyudent's *t-criterion* and the received result of dependence goes to the ListBox component at significance values α = (0,3; 0,5; 0,7);
- the ListBox1 component where the list of criminogenic factors is displayed. At the choice of one factor social factors with strong dependence automatically go to ListBox2 at α = 0,7, it is similar for ListBox3 with moderate dependence at α = 0,5 and ListBox4 with weak dependence at α = 0,3;
- the BitButton component when pressing which the dialog box for the choice of the corresponding file of data of Microsoft Excel opens. This file has to contain basic data about offenses (sheet 1) and indicators of economic and social situation (sheet 2).

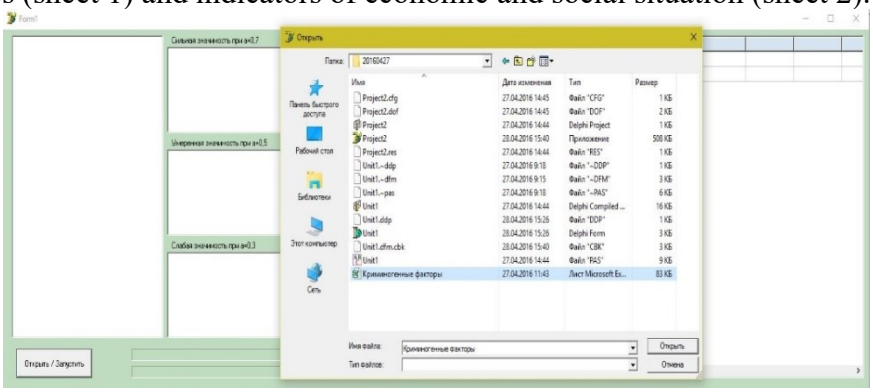


Fig. 1. A main window of the program and a dialog box when opening the file of data

Further obtaining dependences is realized as follows: in the developed software the user is given an opportunity of the choice of a certain type of an offense and display of socio-economic factors for it at various values of a significance value α = (0,3; 0,5; 0,7).

The result of the analysis of dependences of factors on the example of an offense "number of crimes per 10 thousand people of the population" is given in fig. 2.

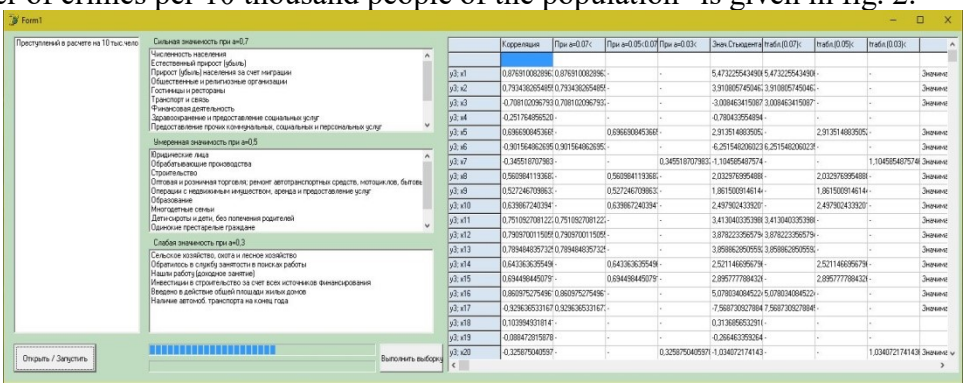


Fig. 2. Result of the analysis of dependences of factors of a criminogenic situation

In this case at α = 0,3 (weak dependence) render the following socio-economic factors on this type of an offense: agriculture, hunting and forestry; addressed in an employment service in job searches; found work (profitable occupation); investments into construction at the expense of

all sources of financing; it is put into operation the total area of houses; existence of the motor transport on the end of the year. Similarly, it is possible to see the list of social factors in case of moderate and strong dependences.

The system analysis of the developed software showed that at its development it was succeeded to solve a number of the problems automating iterative process of work with statistical data. In particular, when reading basic data the software allows to manipulate syntax of the submitted data that ensures its faultless functioning.

Thus, development of this software allows to increase efficiency, keeping time resources for implementation of the analysis of dependences of factors of a criminogenic situation, by reading of basic data directly from the file without data input by the user manually. On the basis of application of methods of determination of correlation dependence, it is possible to draw a conclusion that the software rather precisely shows the regularities occurring in the criminal environment. In general, discharged in the course implementation of the analysis of dependences in a criminogenic situation serve as valuable data for effective counteraction of crime, prevention of offenses, to timely identification of the existing problems in the criminal environment and to rational distribution of forces and means of law-enforcement bodies on observance of a law and order.

**2. The used technical means**

The program module is developed in the environment of visual programming of Borland Delphi 7 with use of the Microsoft Excel package.

**3. Special conditions and requirements of organizational, technical and technological character**

The software functions in an operational environment of Windows*. For loading of basic data, calculation of formulas and a conclusion of final information on the computer the standard applied Microsoft Excel package has to be installed. Extends on any carrier.

**4. Conditions of transfer of documentation or its sale**

Condition of transfer of this software product is the contract of purchase and sale signed between the Sterlitamak branch of the Bashkir state university and interested party. Interested persons for obtaining more detailed information can send the inquiries to the address: E-mail: albinabikbaeva@gmail.com.

## ADVERTISING AND TECHNICAL DESCRIPTION "Software" the automated information system of the analysis of factors of commission of offenses"

*Sterlitamak branch VO Bashkirsky Public Educational Institution state university*
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***UDC*** *004.42*
***GRNTI*** *50.01.85, 50.05.13, 20.23.17, 20.23.21*

**1. Functional purpose of a product, area of its application, its appointment**

Information and analytical providing promotes effective activities of law enforcement agencies for the prevention of crimes. The condition of crime can depend in many respects on a geographical position of places of commission of crimes. Features of the district can promote, or resist to commission of crimes. Taking into account problems of integration of databases and specifics of solvable tasks it is necessary to develop the software of a geographic information system for activities of law enforcement agencies for prevention of offenses.

This software is developed in the environment of visual programming of Borland Delphi 7. The algorithm of obtaining coordinates and visualization on the map of places of commission

of crimes and objects of the district in a geographic information system is programmatically realized. The developed application will allow to analyze interrelation between a spatial arrangement of crimes and objects of the district which can promote or resist to commission of offenses. This software is intended for introduction in Management of the Ministry of Internal Affairs of Russia in the city of Sterlitamak.

By application programming databases of the committed crimes (UVD) and objects of the district (Object) in Microsoft SQL Server are designed and developed. The UVD database contains tables of cards of the accounting of crimes (KUP) in which there will be addresses of the committed crimes, and also chapters of the Criminal code of the Russian Federation (Criminal code of Russian Federation) (glava), and in the Object database – tables of stationary and local points of police (PP) and pubs of the city of Sterlitamak (Zaved).

The structure of the UVD and Object databases is presented in fig. 1.

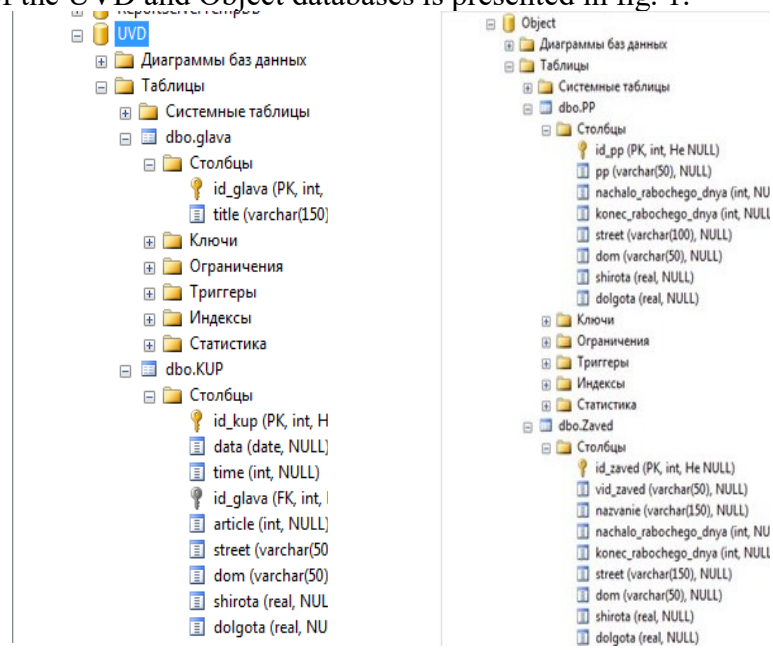
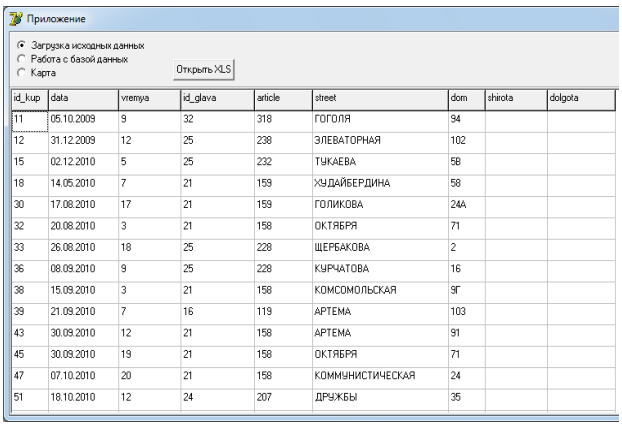



Fig. 1. Structure of the UVD and Object databases

The created tables need to be filled in with data. Automation of process of their filling by calculation of coordinates of places of commission of crimes and objects of the district is made in the environment of visual programming of Delphi.

Work of the programmed application is divided into 3 stages:

1. Loading of basic data. When pressing the Open XLS button the user needs to choose the file of the .xls format which contains data on the committed crimes (coordinates of places of commission are absent). At the same time the chosen table is displayed in an application window (fig. 2).




| id_kup | data | vremya | id_glava | article | street | dom | shirota | dolgota |
|---|---|---|---|---|---|---|---|---|
| 11 | 05.10.2009 | 9 | 32 | 318 | ГОГОЛЯ | 94 | | |
| 12 | 31.12.2009 | 12 | 25 | 238 | ЭЛЕВАТОРНАЯ | 102 | | |
| 15 | 02.12.2010 | 5 | 25 | 232 | ТУКАЕВА | 5В | | |
| 18 | 14.05.2010 | 7 | 21 | 159 | ХУДАЙБЕРДИНА | 58 | | |
| 30 | 17.08.2010 | 17 | 21 | 159 | ГОЛИКОВА | 24А | | |
| 32 | 20.08.2010 | 3 | 21 | 158 | ОКТЯБРЯ | 71 | | |
| 33 | 26.08.2010 | 18 | 25 | 228 | ЩЕРБАКОВА | 2 | | |
| 36 | 08.09.2010 | 9 | 25 | 228 | КУРЧАТОВА | 16 | | |
| 38 | 15.09.2010 | 3 | 21 | 158 | КОМСОМОЛЬСКАЯ | 9Г | | |
| 39 | 21.09.2010 | 7 | 16 | 119 | АРТЕМА | 103 | | |
| 43 | 30.09.2010 | 12 | 21 | 158 | АРТЕМА | 91 | | |
| 45 | 30.09.2010 | 19 | 21 | 158 | ОКТЯБРЯ | 71 | | |
| 47 | 07.10.2010 | 20 | 21 | 158 | КОММУНИСТИЧЕСКАЯ | 24 | | |
| 51 | 18.10.2010 | 12 | 24 | 207 | ДРУЖБЫ | 35 | | |

Fig. 2. Loading of basic data

2. Automatic filling of tables of databases with coordinates of addresses. After pressing of the Updating of Base button (fig. 3) the program creates files of the .xml format which contain coordinates of addresses, addressing at the same time Yandex Maps (fig. 4).

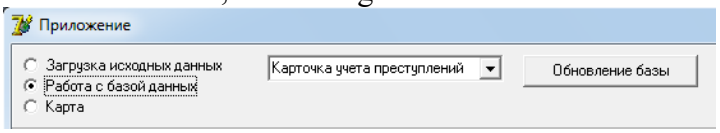



Fig. 3. Work with the database

Fig. 4. The Xml-document with address coordinates

Then the program carries out requests in Microsoft SQL Server for updating of tables in the fields "shirota" and "dolgota". After updating of databases it is possible to see result – the table KUP with coordinates of addresses (fig. 5).

ADMIN-PC.UVD - dbo.KUP

| id_kup | data | id_glava | article | time | street | dom | shirota | dolgota |
|---|---|---|---|---|---|---|---|---|
| 11 | 2009-10-05 | 32 | 318 | 11 | ГОГОЛЯ | 94 | 53,6028748 | 55,9433479 |
| 12 | 2009-12-31 | 25 | 238 | 11 | ЭЛЕВАТОРНАЯ | 102 | 53,6322556 | 55,9388847 |
| 15 | 2010-12-02 | 25 | 232 | 7 | ТУКАЕВА | 5В | 53,6402245 | 55,9641266 |
| 18 | 2010-05-14 | 21 | 159 | 5 | ХУДАЙБЕРДИНА | 58 | 53,62323 | 55,9530869 |
| 30 | 2010-08-17 | 21 | 159 | 3 | ГОЛИКОВА | 24А | 53,64006 | 55,9346771 |
| 32 | 2010-08-20 | 21 | 158 | 4 | ОКТЯБРЯ | 71 | 53,60797 | 55,9362946 |
| 33 | 2010-08-26 | 25 | 228 | 7 | ЩЕРБАКОВА | 2 | 53,62886 | 55,9528961 |
| 36 | 2010-09-08 | 25 | 228 | 7 | КУРЧАТОВА | 16 | 53,62866 | 55,9197655 |
| 38 | 2010-09-15 | 21 | 158 | 9 | КОМСОМОЛЬС... | 9Г | 53,6145477 | 55,9588242 |
| 39 | 2010-09-21 | 16 | 119 | 17 | АРТЕМА | 103 | 53,61857 | 55,90509 |
| 43 | 2010-09-30 | 21 | 158 | 22 | АРТЕМА | 91 | 53,6208344 | 55,90289 |
| 45 | 2010-09-30 | 21 | 158 | 2 | ОКТЯБРЯ | 71 | 53,60797 | 55,9362946 |

Fig. 5. The table with coordinates of addresses in Microsoft SQL Server

3. Drawing the received coordinates on the card. In the developed application there is a possibility of the choice of criteria for display of necessary tags on the card: chapters of the criminal code of Russian Federation, date and time of commission of crimes, type of pubs, their operating mode and stationary / local points of police (fig. 6).

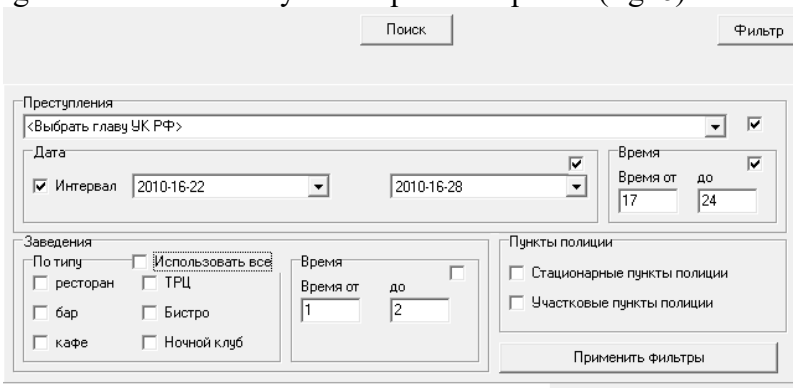



Fig. 6. Criteria of display of tags

After installation of the necessary filter the user has a possibility of the choice of criteria of visualization of tags on the card. Then it is necessary to press the Search button for evident display of places of commission of crimes and objects of the district (fig. 7).

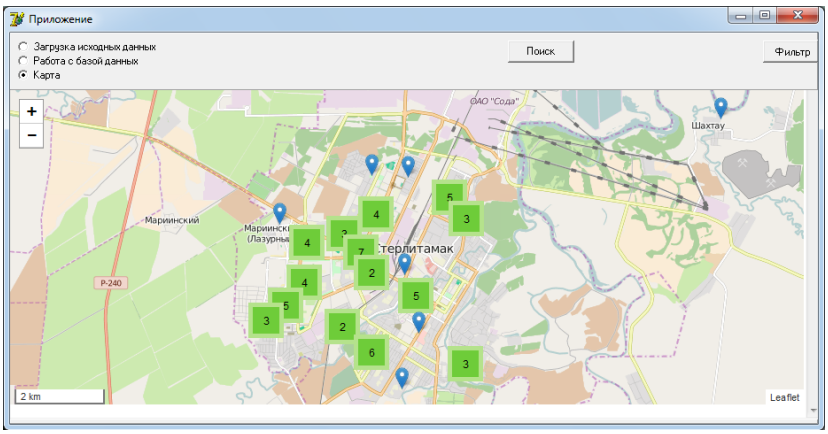



Fig. 7. Tags on the card

The developed software meets the requirements of law-enforcement bodies and is capable to make a contribution to their law-enforcement activities for prevention of offenses.

**2. The used technical means**

The program module is developed in the environment of visual programming of Borland Delphi 7. Databases of the committed crimes and objects of the district are designed and developed in Microsoft SQL Server DBMS.

**3. Special conditions and requirements of organizational, technical and technological character**

The software functions in an operational environment of Windows*. Extends on any carrier.

**4. Conditions of transfer of documentation or its sale**

This software product can be transferred or sold to any natural or legal entity on the basis of the mutual arrangement with developers. Interested persons for obtaining more detailed information can send the inquiries to the address:

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## ADVERTISING AND TECHNICAL DESCRIPTION "Program module "Analytical Reporting"

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***UDC*** *004.42*
***GRNTI*** *50.01.85, 50.05.13, 20.23.17, 20.23.21*

**1. Functional purpose of a product, area of its application, its appointment**

The choice of a development tool of reports in each case has to be reasonable and dictated by features and complexity of solvable tasks, and also volume of resources and means which can be spent for realization of a subsystem of the reporting. It is necessary to consider, both possibilities of systems, and cost of introduction and support of decisions.

The generator of reports is the independent appendix capable to interact with databases without the assistance of any "intermediaries". The most important feature of modern generators is an opportunity to carry out the independent, independent database management system (DMS) and appendices of the databases (D), data processing, and this processing can sometimes be rather difficult.

The preference was given in our case to the generator of reports FastReport. The important principle of products of FastReport is ensuring universality from the point of view of a format of the processed data, a visual development environment and high speed.

FastReport provides all necessary tools for development of reports, including the visual designer of reports, a kernel of a subsystem of reports and a window of preview.

Thus, FastReport – the qualitative product meeting all requirements imposed to modern generators of reports.

This program module is developed in the environment of visual programming of Borland Delphi 7. For development of the reporting in the environment of visual programming of Delphi the generator of reports FastReport is used. The reports created by means of this generator comprise valuable information which gives the chance to the head of the organization to establish more accurate purposes and tasks in the management sphere. The program module is intended for introduction in the existing software of VerMediko of the medical center LLC Hippocrates.

For work with the reporting in MySQL DBMS the database consisting of two tables which define type of the report and additional components on a form, necessary during the work (fig. 1) with it is created.

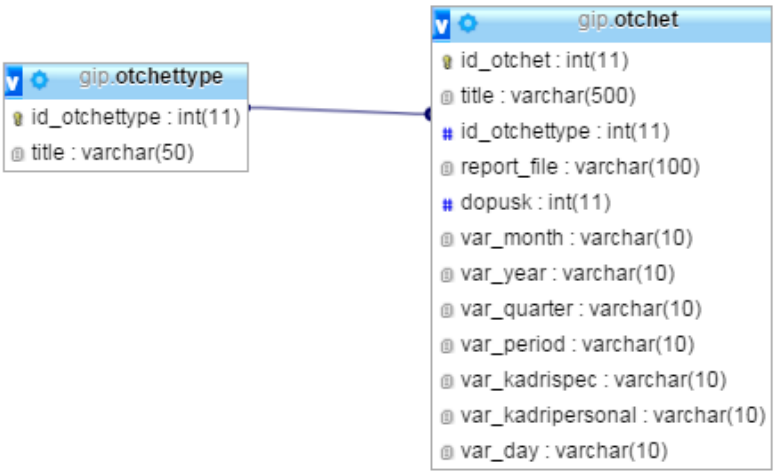


Fig. 1. Communication of tables of the reporting

For creation of the report in the environment of Delphi by means of the FastReport generator it is necessary to execute the following algorithm:

1) to create SQL request for selection of necessary information;

2) to transfer the components which are responsible for display of data in the report to a form;

3) to issue a report template for more convenient display of data;

4) to start the application for viewing of the report.

According to this algorithm, it is possible to create reports of any complexity.

Let's review an example of the report constructed by means of the FastReport generator which will make a conclusion of data on the number of patients to each doctor for a certain month.

For a start it is necessary to create SQL inquiry which will take information, actual for us, from the database.

SELECT kadripersonal.FIO, Count (Distinct kassa.id_client) as Kolvo;

FROM kassa;

INNER JOIN kadripersonal on kadripersonal.id_kadripersonal=kassa.id_kadripersonalvrach;

WHERE (MONTH(kassa.day)= '+month+') and (YEAR(kassa.day)= '+year+');

GROUP BY kadripersonal.FIO;

The following stage is installation of components with which creation of reports begins. We place on a form the frxReport components, intended for creation of the report, and frxDBDataset serving for connection to components of the database (fig. 2).

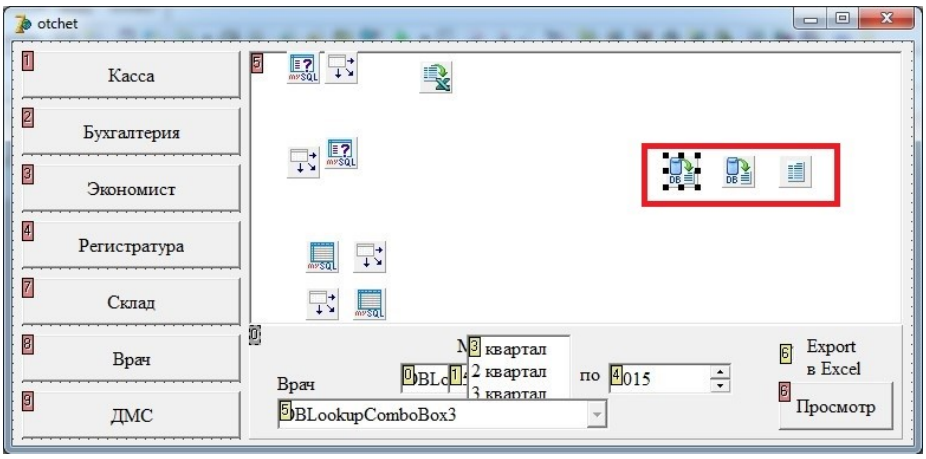


Fig. 2. FastReport components

We pass with double click of a mouse on the frxReport component to the designer of the report which appearance is given in fig. 3.

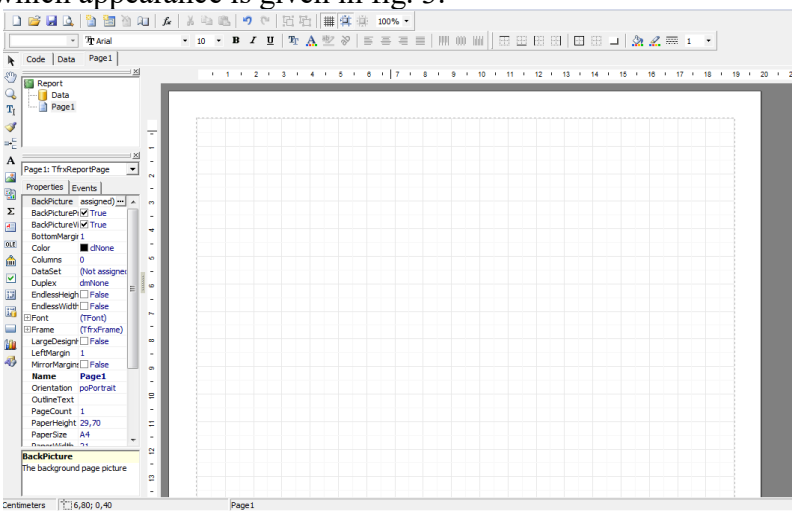

Fig. 3. An empty template of the report in FastReport

The designer provides to the user convenient means for development of appearance of the report and allows to execute preview at once. The interface of the designer is executed at the modern level with use of toolbars which arrangement can be changed to the taste.

At this stage it is necessary to issue the report according to requirements of the organization. In our case the report will be presented in the table form. At the beginning of the report company details which are made out in the form of variables will be specified and are described in a program code.

Further we will establish all necessary variables in "cap" of the report and we will pass to registration of bands. "Bands" in FastReport are understood as logically related group of elements of the report (for example, "report heading", "page heading", "data" etc.). In this case we will place the following bands in the working field of the designer: the heading of the report (ReportTitle), heading of these (MasterHeader) given the first level (MasterData) which are removed, according to inquiry conditions, and the cellar of data (MasterFooter) – the section in which the total number of patients will be displayed (by application of the modular Sum function).

As a result, the template of the report takes the following form (fig. 4).

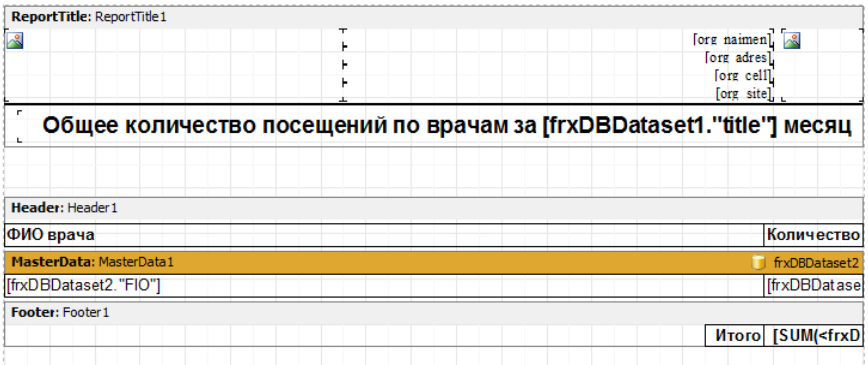


Fig. 4. The filled report template in FastReport

Now we pass to the final stage of creation of the report. For this purpose we will start the application and we will check correctness of display of the report created by us. The result is presented in fig. 5.

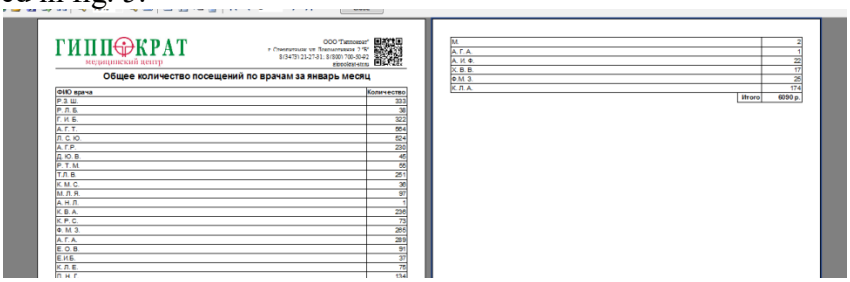


Fig. 5. Result of a conclusion of the report

According to the existing federal law "About information, information technologies and information security" transfer of confidential information to the third parties without consent of her owner is forbidden. For this purpose all data having confidential character were protected by use of pseudonyms, change of personal data on patients and personnel.

Thus, use of rather simple algorithm allows to construct reports of any complexity that, in turn, gives a big scope for actions of administrative personnel of the company, in particular, of the medical center LLC Hippocrates. On the basis of this algorithm other reports conforming to requirements of the medical center are created.

**2. The used technical means**

The program module is developed in the environment of visual programming of Borland Delphi 7. The database is designed in the MySQL database management system. Reports are created by means of the FastReport generator.

**3. Special conditions and requirements of organizational, technical and technological character**

The program module functions in an operational environment of Windows*. Extends on any carrier.

**4. Conditions of transfer of documentation or its sale**

This software product can be transferred or sold to any natural or legal entity on the basis of the mutual arrangement with developers. Interested persons for obtaining more detailed information can send the inquiries to the address:

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## ADVERTISING AND TECHNICAL DESCRIPTION "Program Stomatology module

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***UDC** 004.42*
***GRNTI** 50.01.85, 50.05.13, 20.23.17, 20.23.21*

**1. Functional purpose of a product, area of its application, its appointment**

Now there is a set of systems which automate work of the medical center. All of them are insufficiently "full" as do not consider specifics of concrete area or a field of activity. Therefore often it is required or to finish the ready software, or to make part of operations manually that in turn attracts loss of time.

This program module represents the application for work with the MySQL database. It is intended for introduction in the existing software of VerMediko of the medical center LLC Hippocrates. Further use of the developed module will help to reduce time of search of the necessary information on the specific patient and will relieve the worker of stomatology of need to manually make different documentation. Thus, this program module will allow to automate work of stomatology of the medical center LLC Hippocrates completely.

The database for this module is designed in the MySQL database management system. The structure of the database is given in tab. 1.

Table 1. Structure of tables of the database

| Column name | Type of data | Description |
|---|---|---|
| *General table (ST)*<br>the table containing data on the patient's tooth, his diagnosis and treatment | | |
| id_st | INT | Identifier |
| Day | DATE | Date |
| id_clientpriem | INT | Reception code |
| id_client | INT | Client's code |
| *Table of clients (client)*<br>the table containing data on the client (a surname, a name, a middle name, contact information) | | |
| id_client | INT | Client's code |
| Fam | VARCHAR(50) | Surname |
| Imya | VARCHAR(100) | Name |
| Otch | VARCHAR(100) | Middle name |
| Pol | VARCHAR(50) | Floor |
| Cell | VARCHAR(50) | Phone |
| *Table of reception (clientpriem)*<br>the table containing data on day of reception | | |
| id_clientpriem | INT | Reception code |
| Day | DATE | Date |
| *Purpose of visit (stCP)*<br>the table containing data on the visit purpose | | |
| id_stcp | INT | Identifier |
| Title | VARCHAR(100) | Name |
| *The intermediate table about the purposes of visit (stSTCP)*<br>the table containing data on the purpose of visits of certain clients | | |
| id_st | INT | Identifier |
| id_stcp | INT | Visit purpose code |
| *General complaints (stGO)*<br>the table containing data on the general complaints | | |
| id_stgo | INT | Identifier |
| Title | VARCHAR(100) | Name |
| *The intermediate table about the general complaints (stSTGO)*<br>the table containing data on the general complaints of certain clients | | |
| id_st | INT | Identifier |
| id_stgo | INT | Complaint code |
| *Allergy (stAL)* | | |

| Column name | Type of data | Description |
|---|---|---|
| the table containing data on allergic reactions | | |
| id_stal | INT | Identifier |
| Title | VARCHAR(100) | Name |
| *The intermediate table about an allergy (stSTAL)*<br>the table containing data on allergic reactions of certain clients | | |
| id_st | INT | Identifier |
| id_stal | INT | Allergy code |
| *Complaints to tooth (stGL)*<br>the table containing data on local complaints (complaints to tooth) | | |
| id_stgl | INT | Identifier |
| Title | VARCHAR(100) | Name |
| *The intermediate table about complaints to tooth (stSTGLDENT)*<br>the table containing data on complaints to a certain tooth | | |
| id_st | INT | Identifier |
| id_stdent | INT | Number of tooth |
| id_stgl | INT | Code of the complaint to tooth |
| *Treatment of tooth (stLECH)*<br>the table containing data on treatment | | |
| id_stlech | INT | Identifier |
| Title | VARCHAR(100) | Name |
| *The intermediate table about treatment of tooth (stSTLECH)*<br>the table containing data on treatment of a certain tooth | | |
| id_st | INT | Identifier |
| id_stdent | INT | Number of tooth |
| id_stlech | INT | Treatment code on tooth |
| *Material expenses on tooth (stRASHOD)*<br>the table containing data on raskhodovanny materials on treatment | | |
| id_strashod | INT | Identifier |
| Title | VARCHAR(100) | Name |
| *The intermediate table about the consumption of materials on treatment of tooth (stSTRASHOD)*<br>the table containing data on raskhodovanny materials on treatment of a certain tooth | | |
| id_st | INT | Identifier |
| id_stdent | INT | Number of tooth |
| id_strashod | INT | Code of raskhodovanny material on treatment of tooth |

In fig. 1 the chart of the database is submitted.

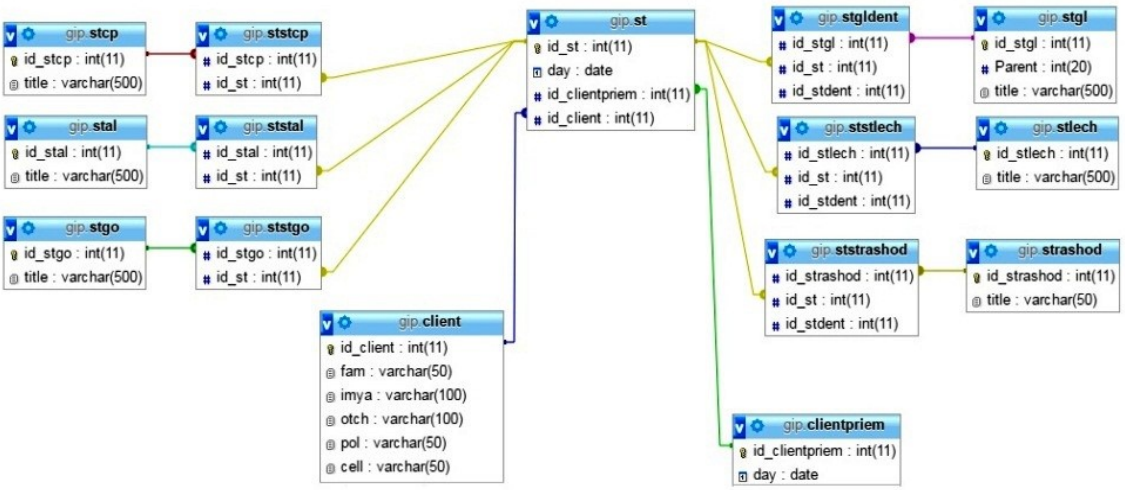


Fig. 1. Chart of the database

The client part of the appendix is realized in the environment of visual programming of Borland Delphi 7 with use of the ADO technology.

The appendix includes the following forms:

StNAZNACH form (fig. 2). Working in this form, the employee can check data on the client, his contact information, and also add and edit information on the visit purpose, the general complaints and allergic reactions. All its actions will automatically register in the database.

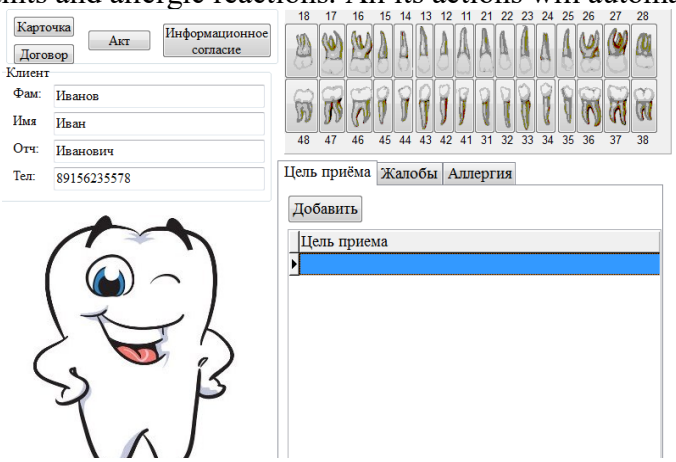


Fig. 2. StNAZNACH form

StDENT form (fig. 3). Working in this form, the employee can add and edit data on complaints of the patient to tooth, treatment and raskhodovanny materials at treatment of tooth. All its actions will automatically register in the database.

The chart of communication of these forms of the appendix with tables of the database is given in fig. 4.

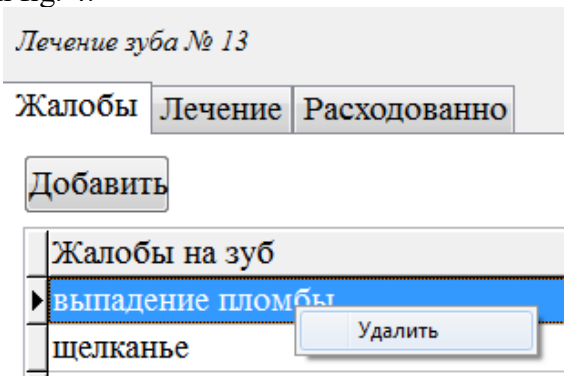


Fig. 3. StDENT form

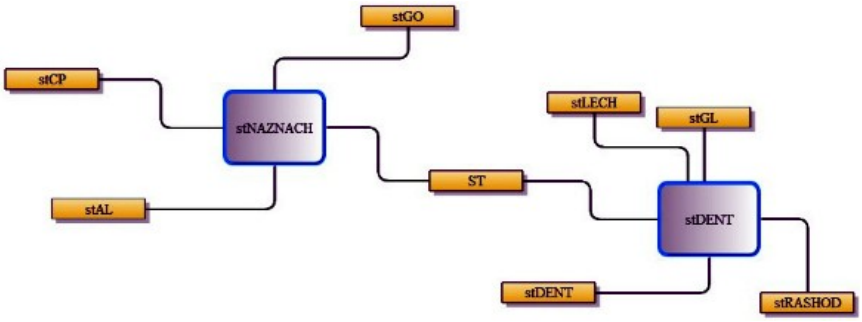


Fig. 4. Chart of communication of forms with tables of the database

The possibility of formation of reports means of the FastReport generator also has the appendix. The result of use of this generator of reports on the example of information consent is presented in fig. 5.

**ИНФОРМИРОВАННОЕ ДОБРОВОЛЬНОЕ СОГЛАСИЕ ПАЦИЕНТА НА МЕДИЦИНСКОЕ ВМЕШАТЕЛЬСТВО**

(на основе Формы, утвержденной Приказом Минздрава России от 20.12.2012 N 1177н)

Я, **Иванов Иван Иванович** рождения, зарегистрированный по адресу: **кирова 37**, даю информированное добровольное согласие на виды медицинских вмешательств, включенные в Перечень определенных видов медицинских вмешательств, на которые граждане дают информированное добровольное согласие при выборе врача и медицинской организации для получения первичной медико-санитарной помощи, утвержденный приказом Министерства здравоохранения и социального развития Российской Федерации от 23 апреля 2012 г. № 390н (зарегистрирован Министерством юстиции Российской Федерации 5 мая 2012 г. № 24082) (далее – Перечень), для получения первичной медико-санитарной помощи/получения первичной медико-санитарной помощи лицом, законным представителем которого я являюсь (ненужное зачеркнуть), а также следующих видов медицинских вмешательств (медицинских услуг): стоматологии

в медицинском центре общества с ограниченной ответственностью «Гиппократ»

Медицинским работником Петров Петр Петрович

(должность, Ф.И.О. медицинского работника)

Fig. 5. Information consent

**2. The used technical means**

The program module is developed in the environment of visual programming of Borland Delphi 7. The database is designed in the MySQL database management system. Reports are created by means of the FastReport generator.

**3. Special conditions and requirements of organizational, technical and technological character**

The program module functions in an operational environment of Windows*. Extends on any carrier.

**4. Conditions of transfer of documentation or its sale**

This software product can be transferred or sold to any natural or legal entity on the basis of the mutual arrangement with developers. Interested persons for obtaining more detailed information can send the inquiries to the address:

E-mail: albinabikbaeva@gmail.com

## ADVERTISING AND TECHNICAL DESCRIPTION "The Program for the Solution of a Task of the Direct-sales Representative by means of Ant Algorithm"

*Semenov S.S., Tkachev D.F , Pedan A.V , Bataev M.R , Alisevich E.A., Gusev A.P., SHarapkaliev E.D , Kiselev D.V.*

***UDC** 4*
***GRNT** 50.53.15, 28.17.19, 27.45.15I*

**1. Functional purpose of the program, area of its application, its restriction**

Purpose of the program

The program for the solution of a task of the direct-sales representative by means of ant algorithm is intended for finding of the brought closer solution of a task of the direct-sales representative, and also the solution of similar problems of search of routes on columns.

In a basis of the program the ant algorithm (algorithm of optimization of an ant colony) which main idea is imitation of behavior of an ant colony by search of food is put. Passing a route from the dwelling to a food source, ants leave behind a trace of a pheromone which evaporates over time. Firmness of a pheromone on a route depends from are long a route and from quantity of ants who passed along this route.

The program allows to carry out search of various ways on columns. The colony of ants is considered as mnogoagentny system in which each ant (agent) functions independently by very simple rules. Each ant consistently builds the solution of an objective, moving according to the count. On each of the passable sites ants postpone a pheromone on which concentration the probability of the choice of this site for the movement depends further.

The program is realized in the environment of object-oriented modeling of AnyLogic PLE 7.3.0.

Short description of work

The program for the solution of a task of the direct-sales representative allows to define an optimum route of the movement of the direct-sales representative which purpose consists in visiting all objects which are written down in a task for the shortest time and with the smallest expenses by ant algorithm. In other words – search of the way connecting two or more than a knot with use of criterion of an optimality.

The submitted program is developed for application in various areas for the solution of complex challenges of optimization.

Work of the program begins with the Imitation tab having an appearance according to fig. 1.

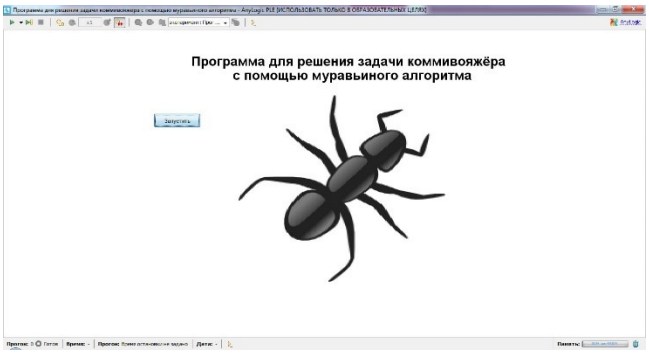


Figure 1 – Window of start of the program

In fig. 2 the main tab of the program on which it is located analyzed by the program of columns, the table of basic data and the histogram of results is presented.

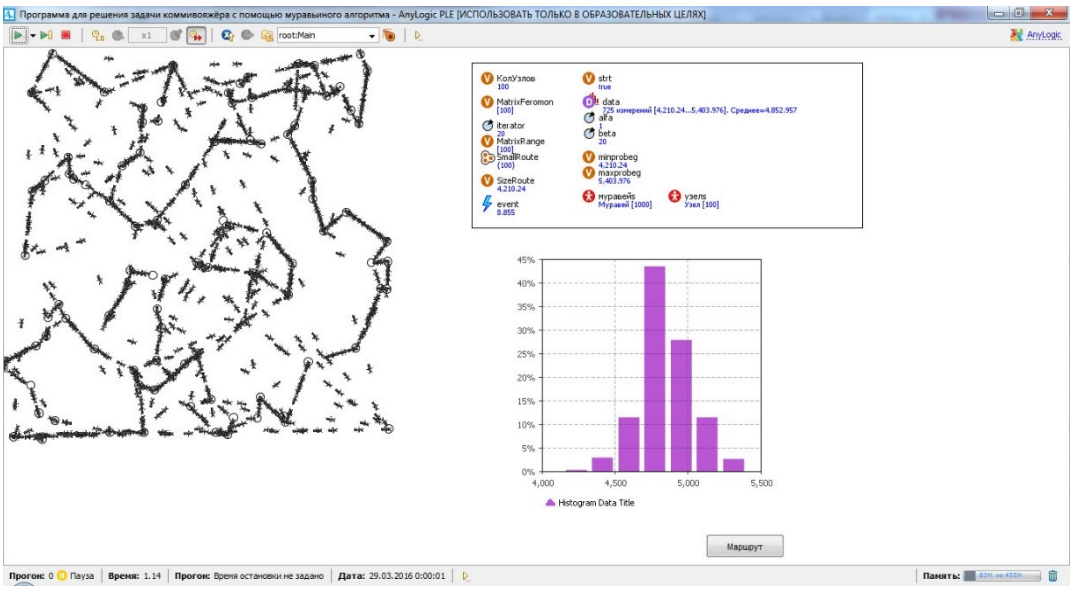


Figure 2 – Main tab of the program

As basic data input of the following parameters is provided in the program:

– number of knots (count's tops);
– quantity of ants (agents) in a colony;
– coefficient of importance of a pheromone;
– coefficient of importance of weight of an edge.

The time spent of extent of a route will depend on the number of knots and quantity muravyyov in a colony. Recurrence of performance of action is carried out by means of iterations at the same time several ants. For one iteration each ant passes a route through all knots (the count's top), irrespective of others.

For the ant who is in any knot, transition to other knot depends on three components: memories of an ant, visibility and virtual trace of a pheromone.

Memory of an ant is a list of those knots which this ant already visited and which it is impossible to come in it once again. Existence of this list guarantees that the ant will not visit twice any of knots in one iteration. With the movement of an ant this list will increase and will be nullified at the beginning of each iteration.

Visibility – size, the return to distance: information expressing desire of an ant to visit knot. The knot is closer, the desire to visit him is more. However for finding of the shortest route use of only one visibility is not enough. The virtual trace of a pheromone on the way between knots is the desire confirmed with experience of ants to visit this or that knot. And, unlike visibility, this size changes after each of iterations of algorithm.

In fig. 3 the chart of conditions of separately taken ant (agent) which represents a set of states is submitted, this ant will be in each of which in this or that period.

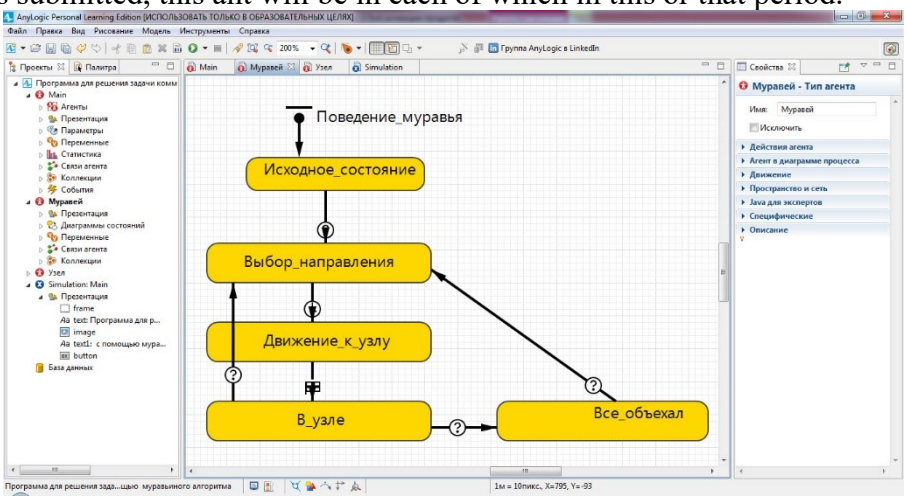

Figure 3 – The chart of conditions of separately taken ant (agent)

The basic rule on which the ant chooses the directions of the movement is expressed by a formula:

$$p_{ij} = \frac{\tau_{ij}^{\alpha} + \frac{1}{\omega_{ij}^{\beta}}}{\sum_{l}^{0}(\tau_{il}^{\alpha} + \frac{1}{\omega_{il}^{\beta}})},$$

where $\tau_{ij}^{\alpha}$ – pheromone level;

$\omega_{ij}^{\beta}$ – edge weight between hubs i and j;

*l* – number of knots, available to transition;

α – the coefficient defining importance of a pheromone;

β – the coefficient defining importance of weight of an edge;

Pheromone level on an edge is updated every time after passing by his ant and is equal:

$$\tau_{ij} = \tau_{ij} + \frac{1}{\omega_{ij}}$$

Evaporation of a pheromone is carried out after the ant bypassed all knots and is calculated on a formula:

$$\tau_i = \tau_i * k,$$

where *i=0. m*("Koluzlov");

*m*("Koluzlov") – the number of knots;

*k* – speed of evaporation of a pheromone 0. 1;

*X* = { *h0*, …, *xm-1* } – a set of congestions;

*i* – a congestion from which the edge price is calculated;

*j* – a congestion to which the edge price is calculated;

*M*("minprobeg") – the best price of a route;

*R*("SizeRoute") – the current price of a route;

*Y*("gde_ya_byl") – the ordered set of the congestions passed by an ant;

*Q*("Kolmuravyev") – quantity of ants (iterations).

Results of work of the program: the constructed route, time of passing of a route, etc. are removed on the main tab after pressing of the route button (fig. 4).

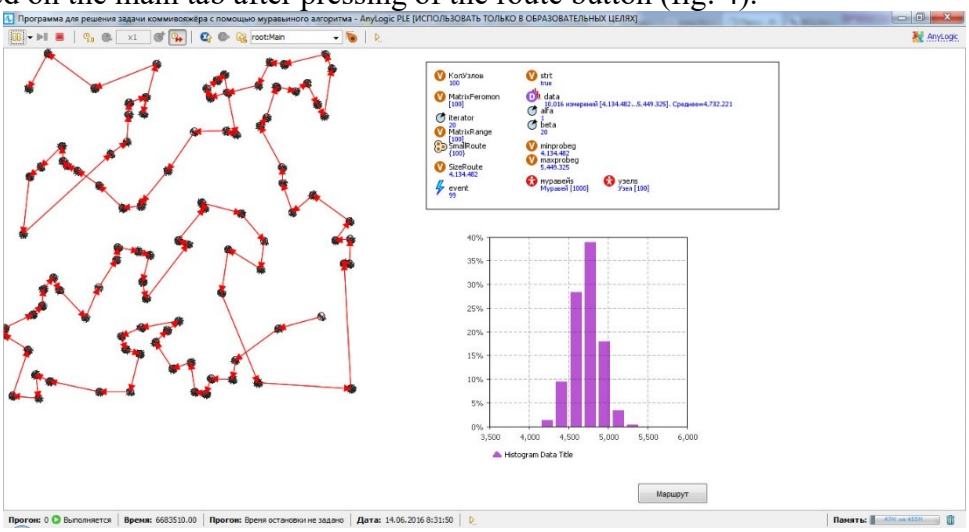


Figure 4 – Conclusion of results of work of the program (option)

**Program scope**

The developed program allows to define an optimum route of the movement of the direct-sales representative which purpose consists in visiting all objects which are written down in a task for the shortest time and with the smallest expenses. The submitted program is developed for application in various areas for the solution of complex challenges of optimization.

**Restrictions of use of the program**

This program is calculated:

- for work under management of an operating system of Microsoft Windows, Mac OS and Linux family;
- on the user with basic skills of use of the software.
- Restrictions for modeling:
- the maximum number of ants (agents) – 65535;
- the maximum number of knots (the count's tops) – 65535;
- firmness of a pheromone – from 0 to 1;
- coefficient of importance of a pheromone – from 0 to 65535;
- coefficient of importance of weight of an edge – from 0 to 65535.

**2. Technical specification on the program**

2.1 Structure of the software product

In a basis of work of the program the ant algorithm presented in fig. 5 is put. The sequence of algorithm execution includes 19 stages:

Stage 1 – input of basic data;

Stage 2 – addition in a set *Y* starting point of the movement of an ant;

Stage 3 – a condition: if the set does not contain *xi* clot, then there is a transition to a stage 4, differently – transition to a stage 7;

Stage 4 – calculation of probability of the movement pij;

Stage 5 – a condition: if *pij* truth, then occurs transition to a stage 6, differently – to a stage 7;

Stage 6 – addition in a set *Y* congestions j, correction of a starting point *of i = j*, calculation of level of a pheromone of an edge *τij*, addition of the price of an edge to the current price of an edge *of R* and transition to a stage 9;

Stage 7 – transition to the following congestion;

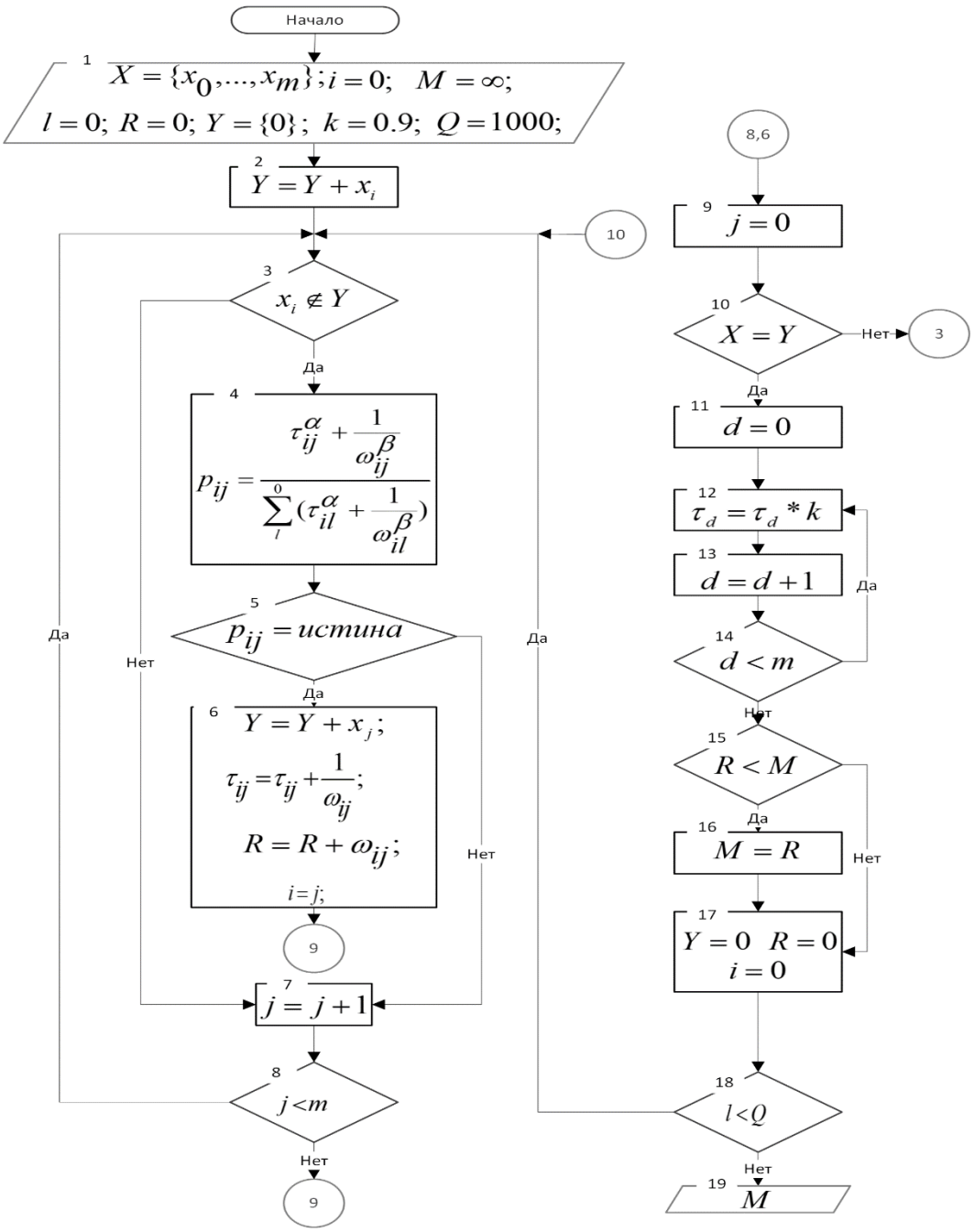


Figure 5 – Ant algorithm

Stage 15 – a condition: if the current price of a route *of R* is less than smallest price *of the M* route, then there is a transition to a stage 16, differently – transition to a stage 17;

Stage 8 – a condition: if the quantity of congestions j which was touched are less than a total of congestions m, then there is a transition to a stage 3, differently – transition to a stage 9;

Stage 9 – installation of an index of a congestion = 0;

Stage 10 – a condition: if the quantity of elements of a set *of X* is equal to quantity of elements of a set *of Y*, then there is a transition to a stage 3, differently – transition to a stage 11;

Stage 11 – installation of an index of the received route equal 0;

Stage 12 – calculation of level of a pheromone of an edge $\tau_{d,d+1}$;

Stage 13 – increase in an index of a congestion d;

Stage 14 – a condition: if the index d <*m-1*, then occurs transition to a stage 12, differently – transition to a stage 15;

Stage 16 – storing of the new price *of M* = *R*;

Stage 17 – zeroing of initial values;

Stage 18 – a condition: if the quantity of ants *of l* are less than a total of ants, then there is a transition to a stage 3, differently – transition to a stage 19;

Stage 19 – a conclusion of results.

2.2 The applied software

For implementation of the developed program the environment of modeling AnyLogic 7 Personal Learning Edition 7.3.0 is used.

2.3 Hardware requirements

For normal functioning of the program the following requirements to hardware-software part of a workplace of the user are imposed:

1. minimum:

– the Intel or AMD Single Core processor with a frequency not lower than 1 GHz;

– random access memory with a capacity not less than 2 GB;

– the integrated video adapter;

– an empty seat on the system section of the hard drive 550 Mb;

– operating system of Microsoft Windows XP, Linux, Mac OS.

2. recommended:

– the Intel or AMD Dual Core processor with a frequency of 2 GHz;

– random access memory with a capacity of 4 Gb;

– the integrated video adapter;

– an empty seat on the system section of the hard drive 550 Mb;

– Windows 10 operating system.

**3. Special conditions of application**

The program is compatible to any versions an operating system of Microsoft Windows, Linux, Mac OS family.

**4. Conditions of transfer of program documentation or its sale**

The program for the solution of a task of the direct-sales representative by means of ant algorithm is developed by staff of Military academy of communication.

Transfer of the software product to the third parties, and also educational institutions, institutions of other ministries and departments is carried out on a contractual basis and is solved directly with authors, at their written consent.

Concerning acquisition and sale of the software product to contact the address:

194064, St. Petersburg, Tikhoretsky Avenue of 3, FGCVOOU WAUGH "Military academy of communication of Marshall of the Soviet Union S. M. Budenny" Ministries of Defence of the Russian Federation.

Phone: 8 (911) 842-95-77

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## ADVERTISING AND TECHNICAL DESCRIPTION "Business Application "Florist" for Support of Sales of Production"

*Eremina I.I.*

***UDC*** *002.6:004.3*
***GRNTI*** *20.53.19*

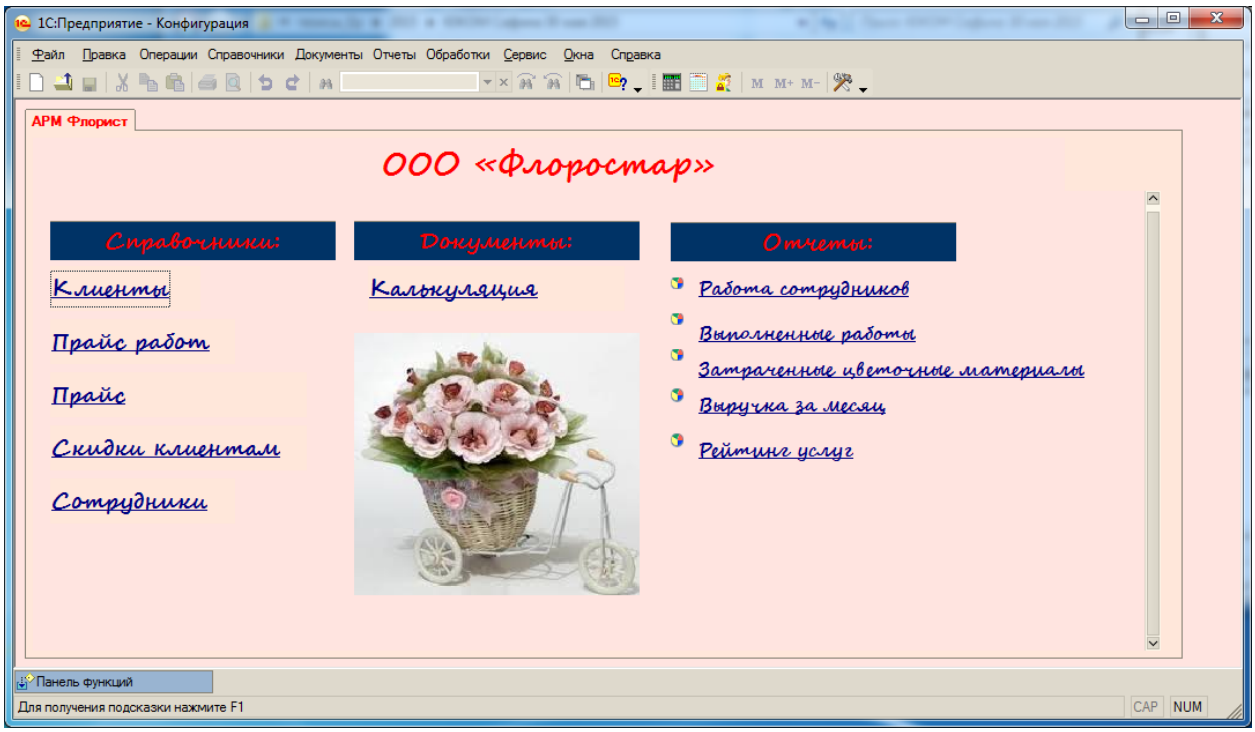
**1. Functional purpose, scope and restrictions**

Problem of automation of floristic salon – to reflect the main part of business processes in information system. Successfully realized IT solution will allow to use more effectively the areas of salon, the equipment, working hours of personnel, will increase loyalty of clients. In particular will help to solve a labor input problem at registration of primary documents "manually", and also to standardize document flow, to simplify obtaining reporting information and to effectively control actions of personnel.

The salon provides the following services:

- wedding bridal bouquet;
- jewelry from flowers in a hairdress;
- buttonholes for the groom and the witness;
- registration of the festive hall and corporate actions in the flowers and inert materials;
- ornament in the flowers of glasses, bottles with wine, gift boxes;
- decoration of the wedding car, train;
- author's compositions from sukhotsvet, a floristic collage;
- gardening of an interior;
- production of creative thematic bouquets and compositions from cut flowers;
- training in art of flower arrangement;
- ritual flower registration;
- window dressing of shops, institutions - seasonal, New Year's;
- wedding floristics;
- grocery baskets;
- registration by spheres;
- registration of a gift;
- registration of an interior;
- bouquet from candies.

This work represents the Information FLORIST system for support of sales of production.




Clients of salon are residents. The prices of salon are focused on clients with middle-income, i.e. with an average monthly salary. The profit is formed as a difference between the volume of realization of services and costs of purchase of goods taking into account own costs. Services which are provided by salon at rather high level.

According to primary activities business processes were allocated:

1. Management is one of key business processes. It is the activity sent for approval of work of all business of processes of the organization, priority activities of the organization.
2. Management of services. Business process provides performance of a complex of the tasks connected with management of the rendered services.
3. Material support – implementation of the management of tasks, providing preparatory activity (the order of materials for flower designs, formation of applications for repair work, etc.).
4. Finance - this business process is system of economic relationship in the course of formation, distribution, use of funds of the enterprise. Finance is the binding environment for all business processes of the enterprise.
5. Accounting – forms information on work of the organization; fixes all changes happening in production and supplying activity (supplies with the necessary information on a circulation of means and process of expanded reproduction of the enterprises; the obtained data are systematized and generalized). Is a component of manufacturing execution system.
6. Management of a manpower – implementation of management of completing of the organization by shots of the workers and employees demanded professions. Maintaining accounting of staff of the organization, development of actions for decrease in turnover of staff.
7. Information support – management of streams of details in the organizations, service technical and the software.

The subsystem "Management of services" interacts with other subsystems:

1. With a subsystem "Management of material support": the data on the purchased expendables given on necessary expendables.
2. With a subsystem "Management of accounting": data about applications of clients, the report on work of masters, on the rendered services and analytical reports, data on standards of the consumption of materials.
3. With a subsystem "Management of a manpower": data of reports on work of florists, data of the staff list.

**Problems of a subsystem "Management of services" and their interrelation**

Main objectives of a subsystem "Management of services" and their interrelation:

1. Planning of activities for production of flower compositions.
2. Formation of the schedule of florists.
3. Automated workplace "Florist"
4. The accounting of actually performed works.
5. Maintaining database of clients.
6. Mailing of e-mails about the carried-out actions.

Description of entrance and output information

Entrance information

1. Conditionally constant information of a task:

The reference book "Clients" – is intended for entering of information on clients, for paperwork. This reference book contains data: name of the client, address, contact phone.

The reference book "Works" – contains information on all works and services which are carried out by salon of floristics. This reference book contains data: name of service, working costs.

The reference book "Flower Materials" – is intended for maintaining the list and cost of the flower materials used when rendering services in salon of floristics.

The reference book "Employees" – is intended for maintaining the list of employees of salon. This reference book contains data: Employee's full name, organic number of the employee, position.

The reference book "Positions" – is intended for storage of positions of salon.

2. Quickly registration information, is formed on the basis of the document accounting:

The document "Accounting" – is intended for registration of write-off of flower materials and the accounting of the performed works when rendering service to the client of salon. Contains 2 tabular parts, the first tabular part contains data: the name of flower material, the quantity used when rendering service, the sum. The second tabular part contains data: name of work, performers, sum.

3. Output information:

– Work of employees.
– The rendered services (the performed works).
– Report on a consumption of flower materials.

Algorithm of the solution of a task

At an initial stage conditional and constant information has to be loaded: reference books "Clients", "Works", "Flower Materials". They are intended for simplification of inputs of documents for the solution of problems of an automated workplace of the Florist.

Registration and analytical functions of department are carried out on the basis of the created reports and the completed document. Thus, accumulation of necessary information for the solution of an objective is carried out. On the basis of the analysis necessary output documents are formed.

Fig. 1. Technological scheme of the solution of a task.

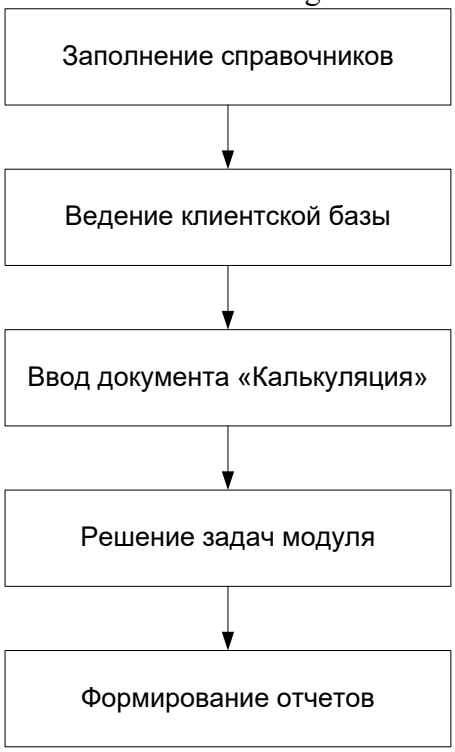



Fig. 2. Algorithm of the solution of a task

In the mode of a configuration the main objects for the solution of problems of the module of customer service are created: reference books, documents, registers of accumulation, reports, user interface.

At an initial stage in system reference books, forms of the list and elements are developed.

The document is developed for registration of economic operations: "Accounting", forms of the list of documents, forms of documents (fig. 3).

Printed form of the document is developed.

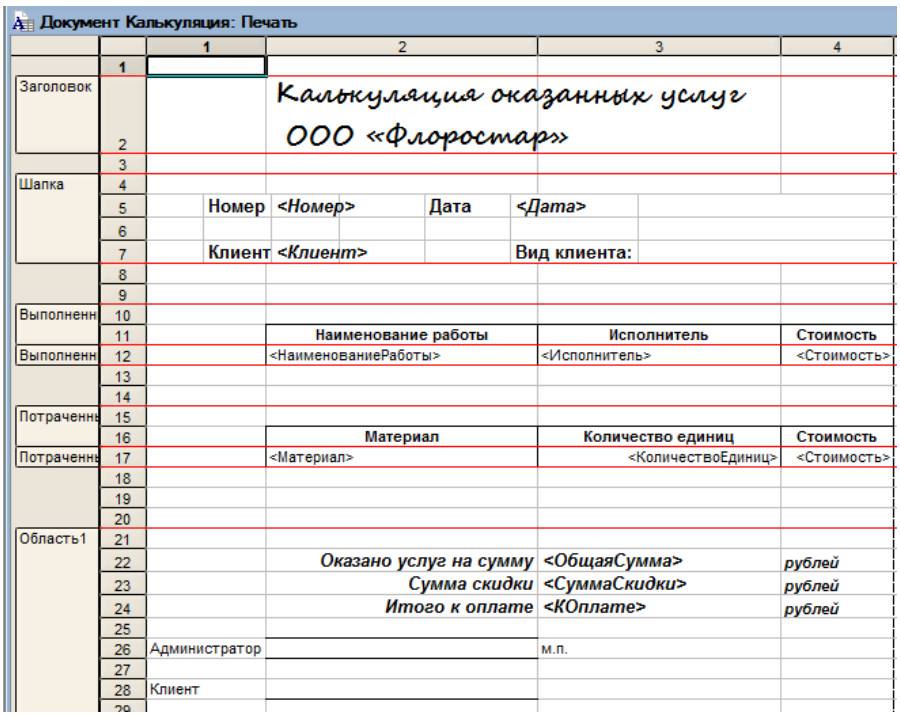



Fig. 4. Printed form of the document "Accounting"

For automation of calculations procedure – the event handler is written.

For accumulation of information the registers of accumulation reflecting the movements of documents are created. For example, register "The Spent Material" (fig. 5 and 6).

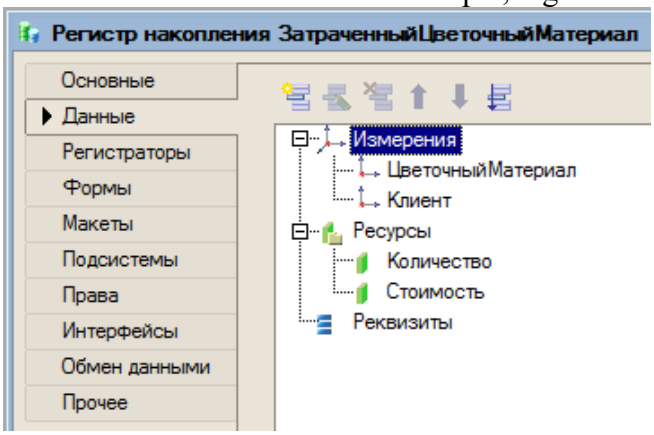



Fig. 5. The accumulation given the register "The spent flower material"

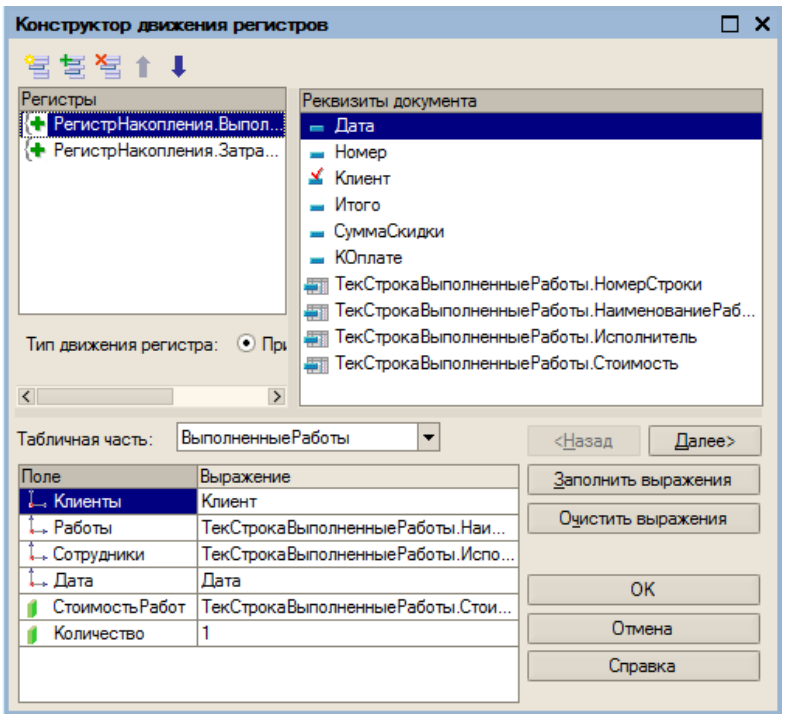



Fig. 6. The designer of the movement of the register of accumulation "The spent material"

With use of the scheme of configuration of data and models of an output form reports are developed.

| | Поле | Путь / Заголовок | Ограничение поля / Ограничение рекви... / Поле | Ус... | Гру... | Уп... | Роль | Выражение п... / Выражения упорядочива... | Проверка иерархии: / Набор данных / Параметр | Тип значения / Доступные значения | Оформление |
|---|---|---|---|---|---|---|---|---|---|---|---|
| - | КоличествоК... | КоличествоК... | ☐ | ☐ | ☐ | ☐ | | | | | |
| | | Объем работ | ☑ | ☑ | ☑ | ☑ | | | | | |
| - | Мастер | Мастер | ☐ | ☐ | ☐ | ☐ | Измерение | | | | |
| | | Мастер | ☐ | ☐ | ☐ | ☐ | | | | | |
| - | Работы | Работы | ☐ | ☐ | ☐ | ☐ | Измерение | | | | |
| | | Работы | ☐ | ☐ | ☐ | ☐ | | | | | |
| - | СтоимостьК... | СтоимостьК... | ☐ | ☐ | ☐ | ☐ | | | | | |
| | | Стоимость р... | ☑ | ☑ | ☑ | ☑ | | | | | |

Fig. 7. The scheme of configuration of the report the Performed works

For creation of the user interface external processing is used.

In the developed business application the expert enters criteria by which he wants to obtain information (accounting, various look reports, data on price lists, employees, client base and so forth). The entered criteria are used in a business application for the analysis and a conclusion of necessary documents.

Thus, the developed and realized business application "FLORIST" allows to provide storage, accumulation of information on clients, to effectively use working hours of personnel, increases loyalty of clients and carries out advance of floristic services of salon in the market.

**2. The used technical means**

Development environment – 1C: Enterprise 8.2. For work with the information FLORIST system it is necessary to have the personal IBM PC Pentium IV computer with the Windows XP/Vista operating system and random access memory from 512 Mb.

**3. Special conditions of application and requirement** of organizational, technical and technological character

The information FLORIST system represents the complex realized by means "1C: The enterprise 8.2", consisting from: developments of a program code, subsystems; reference books, documents, register of accumulation, register of data, reports. Platform "1C: The enterprise 8.2" is delivered with a development tool by means of which new are created or the existing applied decisions change. This development tool is called "configurator". The configuration represents a tree of metadata. Metadata describe all aspects of operation of application. They represent the structured its declarative description. Metadata form hierarchy of objects of which all components of a configuration are formed and which define all aspects of her behavior. Actually,

during the work of a business application the platform interprets metadata, providing all necessary functionality.

The size of a complex of the information FLORIST system makes 2,12 MB.

The information FLORIST system can be delivered on CD ROM or on Internet provided that the platform "1C is installed on the side of the user: Enterprise 8.2".

**4. Conditions of transfer of program production or its sale**

The information FLORIST system is not a commercial product and can be provided to everyone for noncommercial use.

## ADVERTISING AND TECHNICAL DESCRIPTION "Information System of Process and Grocery Reengineering and Budgeting of Business Processes of Department of Information Technologies of Machine-building Enterprise and Calculation of Prime Cost of Its Business Products"

*Ishmuradova I.I., Sibaeva G.R.*

***UDC*** *338.24.01*
***GRNTI*** *06.35.51*

**1. Functional purpose of a product, scope, its restrictions**

The purpose of application programming of system of budgeting is ensuring convenient visual viewing of data, fast transition between numerous reference books of information. All this is provided with means of visual programming of Visual Basic for Application (VBA) of the MS Ekhse1 environment. At the same time big time expenditure on preparation of projects which are necessary when using the MathConnex system is not required.

Appearance (the interface part) of the program is organized as follows.

At start of the appendix the main form which is supplied with the thematic decorative image (figure 1) is displayed.

Risunok1 – the Main form of the developed application of the realized algorithm of budgeting

Structure of the main appendix form following:

1. Basic data - group of buttons of transition to the pages of the same name:
   - Performers of business challenges;
   - Grocery model of business processes;
   - Manpower;
   - Fixed assets;
   - Materials and other expenses;
   - Products of last period.
2. Calculation tables:
   - Calculation of the budget of business challenges;

- Calculation of prime cost of business products.

3. Results:

- General budget of DIT;
- Budget of business processes;
- Staff list.

Set of pages of Basic data group is represented by reference books for the collecting and data storage used in the subsequent in calculation tables.

In calculation tables formulas for definition of the budget of a business challenge and prime cost of business products are included.

The group of the Results pages can be used by users for the analysis of activity of department. Besides, the appendix allows independent formation of the available calculation tables given by the user for the analysis on the basis of.

On each of the listed pages there is a dropping-out list which elements represent references to the pages of the same name. On the General Budget of DIT, Budget of Business Processes and Staff list pages there are Update the Table buttons when pressing on which there is an updating of the summary tables which are on these pages.

Besides, on the General Budget of DIT and Budget of Business Processes page there are charts of expenses. On pages with calculation tables "The budget of business processes" and "The general budget of DIT" is available the Create the Summary Table button allowing the user to create independently necessary summary tables for the analysis of data.

The developed application is used for data input, the analysis of an optimality of use of resources, viewing of reports and represents a powerful platform of calculations with the preset set of logical formulas for faster creation of models of standard management of activity of department.

**2. The used technical means**

Application programming of system of budgeting is possible in the MS Ekhse1 and Math Connex systems.

MS Ekhse1 is the powerful and flexible software combining in itself advantages as spreadsheets with means of the financial and statistical analysis, and means of visual programming by means of Visual Basic for Application(VBA). It allows to automate all complex of works from collection of information, its processing, the analysis before creation of reporting documentation and its publication as for office use, and naweb-knot.

Feature of spreadsheets consists in a possibility of application of formulas for the description of communication between values of various cells. Calculation for the set formulas is carried out automatically. Change of contents of any cell leads to recalculation of all cells according to the changed data. Application of spreadsheets simplifies work with data, and also allows to receive results without carrying out calculations in manual or special programming.

MathConnex-the new means applied in the Mathcad7.0 PRO system. It carries out two major and extremely powerful functions:

- serves for integration of various appendices with the Mathcad system and ensuring their collaboration with use of object communications of OLE2;
- carries out functions of imitating modeling of the models presented by standard blocks in the form of the function chart.

In effect, MathConnex is quite independent appendix included in the Mathcad system and which is carrying out functions of the system integrator. Thanks to it perhaps simple and evident establishment of difficult interrelations between various appendices: the mathematical Mathcad system, the matrix MatLab system, the graphic Axum system, the spreadsheets Excel from the Microsoft Office package, etc. Power of such joint system increases repeatedly, allows to use for the solution of tasks of the user the whole arsenal of various program systems, including the unique functions which are built in them specific and sometimes.

At the same time application sistemymathconnex has also shortcomings:

- effective use of this system demands acquaintance to a number of new software that sometimes not in power to novice users and even users of average qualification;
- sluggishness of work of system is felt even on the personal computer of the class Pentium 166/200 MMX;
- MathConnex has the own programming language demanding efforts on its development;
- there are difficulties at a task of text comments in Russian;
- preparation of projects (documents) for MathConnex demands big expenses of time.

Thus, as a development environment MS Ekhse1s was chosen as application of opportunities of Visual Basic for Application (VBA).

For work with programs it is necessary to have the personal computer possessing the following technical characteristics: Windows XP/Vista/7 or similar, Pentium of 1 GHz and above, 1 GB of the RAM above, 1 MB of free space on the hard drive, the video card of the budgetary level (including integrated for laptops), CD/DVD-ROM, the keyboard, a mouse.

**3. Special conditions and requirements of organizational, technical and technological character**

No.

**4. Conditions of transfer of documentation or its sale**

By agreement with the author

## ADVERTISING AND TECHNICAL DESCRIPTION "The Program of Short-term Forecasting of a Power Consumption for the Subject of the Wholesale Market of the Electric Power and Power of Power Supply Company with Use of the Device of an Artificial Neural Network."

*Federal public budgetary educational institution of the higher education "Omsk state technical university"*

*Hamitov R.N., Gricaj A.S., Tyun'kov D.A.*

***UDC** 621.311*

***GRNTI** 44.29.29*

**1. Functional purpose of the program, scope and its restrictions**

The program is intended for creation of short-term forecasts of a power consumption in the mode "for the days ahead" for subjects of the wholesale market of the electric power and power.

The offered mathematical model of the predicted volume of the EDS is a function from the following variables:

$$V_{2ээ}(t) = \{M, N, \mathrm{T}_{ср}, n, h, V_{1ээ}\},$$

where *V2ee* – the volume which needs to be predicted in the X-1 format (for the days ahead), electricity consumption, MW; *t* – hour interval of time; *M* – serial number of month in a year; *N* – serial day of month, is necessary for tracking of daily dynamics of consumption of energy; *Tsr* – the average daily temperature of air, $^{oC}$, this parameter is the major, consumption of electric energy directly depends on it; *n* – serial number of day in a week, *h* – the sign indicating whether day is output or working (at *h=1* – the day off, and *h=0* the working day). As it is known dynamics of electricity consumption strongly differs in the output and working day; *V1ee* – the volume of the consumed energy for last days similar to the current temporary period, MW.

During creation of the training selection entrance signals of a neural network are presented by parameters t, V1ee, N, Tsr, n, h, and reference values – the V2ee parameter. The fragment of the training selection of data is presented in tab. 1.

Table 1. A fragment of the training selection for a neural network.

| Date<br>Date | Neuronet entrances<br>Input neural network | | | | | | Neuronet exit<br>Output neural network |
|---|---|---|---|---|---|---|---|
| | t | V1ee | N | Tsr | n | h | V2ee |
| 1.04.16 | 1 | 1282 | 1 | 2 | 7 | 1 | 1296 |
| 1.04.16 | 2 | 1282 | 1 | 2 | 7 | 1 | 1275 |
| 1.04.16 | 3 | 1266 | 1 | 2 | 7 | 1 | 1260 |
| 1.04.16 | 4 | 1254 | 1 | 2 | 7 | 1 | 1264 |
| 1.04.16 | 5 | 1247 | 1 | 2 | 7 | 1 | 1251 |
| 1.04.16 | 6 | 1244 | 1 | 2 | 7 | 1 | 1237 |

The structure of a neural network for short-term forecasting of the EDS in the mode "for the days ahead" is presented in fig. 1. It consists of 6 entrance neurons of the first layer, 5 neurons of the hidden layer and 1 output neuron. Function of activation of neuron – sigmoid. For control of scales of a neural network the algorithm of training with the teacher, known as algorithm of the return distribution of a mistake is used.

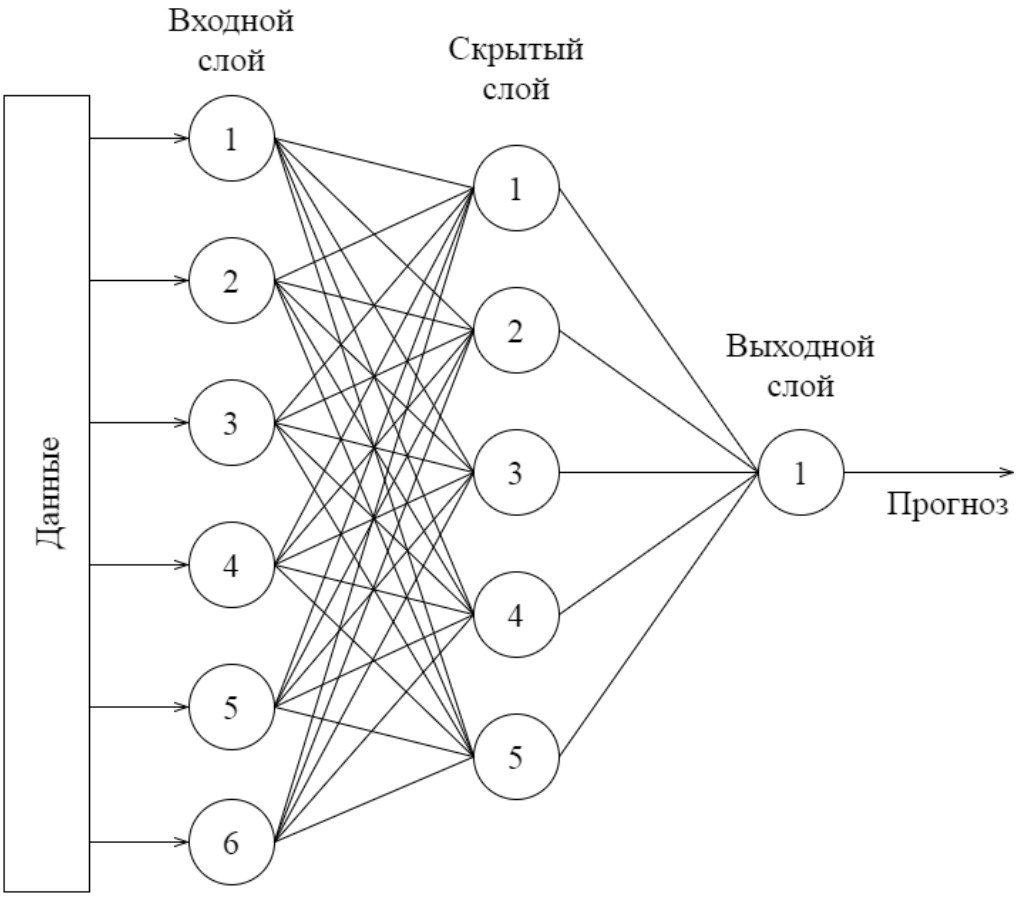



Fig. 1. The scheme of a neural network for creation of the forecast of the EDS.

The amount of neurons of an entrance layer of a network is defined by the input parameters presented in tab. 1 the Example of process of forecasting of the EDS with use of the analytical Rapidminer system is presented in fig. 2.

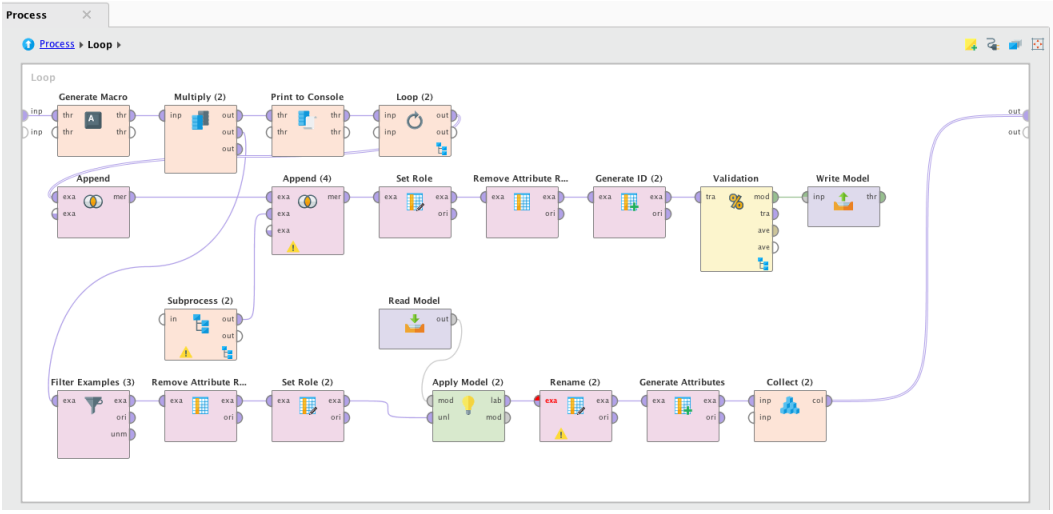



Fig. 2. A fragment of algorithm of forecasting with use of a neural network.

The realized algorithm has modular structure. For development of own operator, it is necessary to realize the interface declared in system. In fig. 3 data of the forecast of a power consumption "for the days ahead" are displayed.

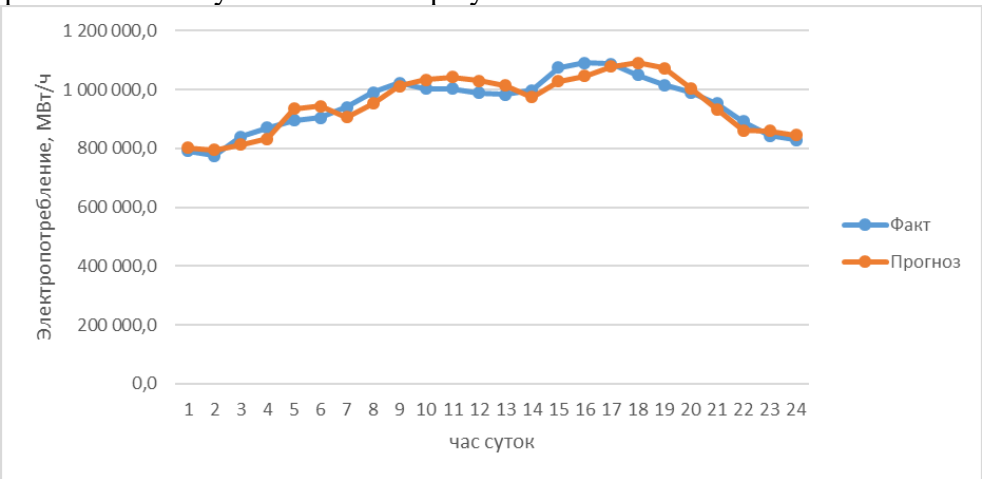



Fig. 3. The forecast of consumption on 19.06.2016 without a temperature and wind index.

**2. The used technical means**

For operation of the program of approximation of the schedule of a power consumption function of a sine and finding of coefficients of function of approximation" the class Pentium computer with the Windows 7/Linux operating system is necessary. The recommended volume of random access memory of the personal computer – 4 GB and more.

**3. Special conditions and requirements of organizational, technical and technological character**

The preset analytical information sitsema of Rapidminer is required it is not lower than 7 versions.

**4. Conditions of transfer of documentation or its sale.**

The program of approximation of the schedule of a power consumption function of a sine, finding of coefficients of function of approximation rasprostranyatesya on the basis of the license contract.

# ADVERTISING AND TECHNICAL DESCRIPTION "Module of Generation of Bar Codes Program

*Federal public budgetary educational institution of the higher education "Omsk state technical university"*

*Bochevich A.I., YAnishevskaya A.G*

***UDC** 004.35*

***GRNTI** 20.53.15, 20.53.21*

**1. Functional purpose of the program, scope, its restrictions**

The program is intended for generation of shaped codes of the Code standard 128 of the entered data. The module allows to keep the generated shaped codes in the form of images for their further use.

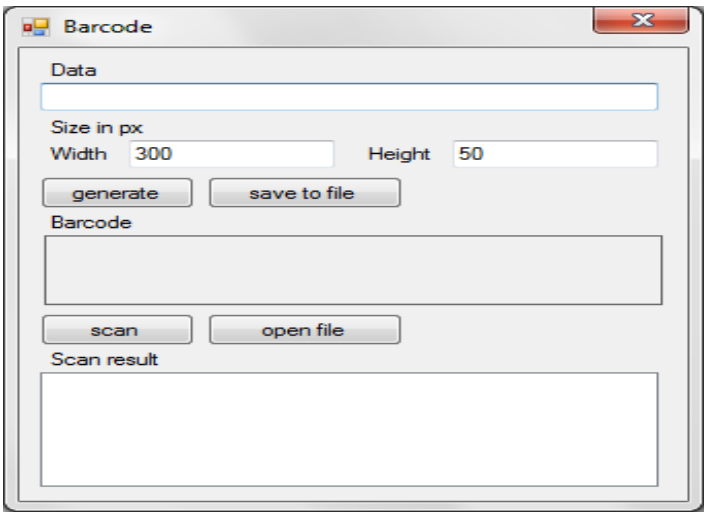



Figure 1. Module window

By means of the Width and Height text fields it is possible to set the bar code size in pixels. If the given size is too small for generation of a bar code for the entered data, then the program will give the error message reporting about it the user.

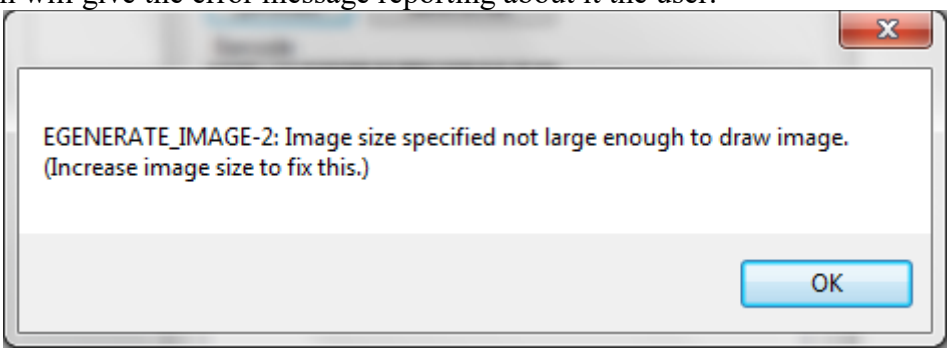



Figure 2. Generation error. The insufficient size of the image for a bar code.

The standard of a bar code Code 128 significantly differs from such widespread standards of a shaped code, such as, of EAN. Differences consist, first of all, in a possibility of coding not only figures, but also letters of the Latin alphabet, and also special symbols. Besides, the digital code in the Code 128 format becomes very compact that is reached due to "double packing" of data when two numbers register in one module of a bar code. Alphabetic symbols are coded by usual — a "single" way that does an alphabetic code in the Code 128 format twice more long than digital.

Also the module allows to scan images of shaped codes for obtaining data from them.

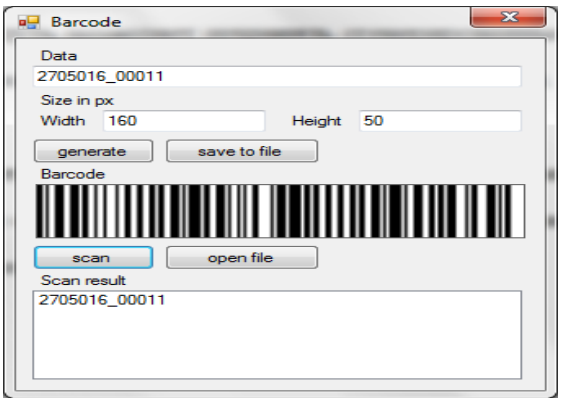



Figure 3. Operation of the module

As a technical tool of development of the program the program cover of Microsoft Visual Studio 2012, the C# programming language used at the same time was chosen.

**2. The used technical means**

The following equipment rooms and software are necessary for operation of the module of generation of bar codes on the computer of the user:

° C: Microsoft Windows XP.

.NET Framework 4.0

Processor type: Pentium IV

Frequency of the processor is not lower than 1 GHz.

Random access memory of 512 MB.

Existence not less than 1 MB of an empty seat on a disk.

**3. Special conditions of application and requirement of organizational, technical and technological character**

Conditions of application have to conform to the modern requirements imposed to operation of the software. The program demands the installed .NET Framework 4.0 package and can be started from any carrier.

**4. Conditions of transfer and sale of program documentation**

The module of generation of bar codes and documentation to it can be transferred to the interested person or the organization on the basis of the contract with OMGTU and authors according to the current legislation.

**Bibliography**

WebCite. [Electronic resource]. – Access mode: [http://www.webcitation.org/66t8IbBVl]

## ADVERTISING AND TECHNICAL DESCRIPTION "Geoinformation Service Management of Map Website

*Federal public budgetary educational institution of the higher education "Omsk state technical university"*

*Kuznecov V.V., Cyba M.E., Kojlybaeva M.T.*

***UDC** 351.07/.08*

***GRNTI** 82.13.11, 82.13.37*

**1. Functional purpose of the program, scope, its restrictions**

One of ways on increase of political activity of citizens in the country can present in the form of the project which idea consists in expression by the population of the civic stand, providing information and offers on the solution of actual problems, to executive bodies of the region. At the same time the power will define expediency of a question, to make administrative decisions for the benefit of the population. The similar control system will work much more effectively existing as the main error of system of interaction of the population and executive authorities is that executive bodies of the power make administrative decisions proceeding from

the reasons which can differ from expectation of the population. Later put in action and receive result which can not suit citizens. The existing system works "from above – down", at the same time it is rational to read from the bottom of hierarchy, from the consumer of results of activity.

The purpose of the Management of Map project as it was given above - it is providing information to executive authorities, about existing a problem in various spheres of activity of the region.

Based on the aforesaid, it is reasonable to provide idea about creation of an electronic portal – "Management of map". Management of map is the electronic portal allowing citizens to build directly the relationship with local authorities, to increase the level of improvement of the city and quality of life of the population, and also to adjust appeal of the region.

Management of map is the interactive, geoinformation service representing a certain territory of municipality, the district, the territorial subject of the Russian Federation which visitors and participants by means of geotags place information on object which, in their opinion, is very important question of municipal, regional value which solution is required from executive authorities.

Each inhabitant of the region which will pass electronic registration and validation of a profile can become the participant. The entrance will be is made on a phone number and the password. At registration of the new user for number the SMS message with a code for confirmation of data will be sent. It is necessary to specify without fail personal data: A full name, the address of the actual accommodation and registration, passport data (a series, number whom and when it is given out), to examine and agree with processing of personal information. After registration each user is obliged to confirm in writing the personality and to send to edition of the project the registered mail, or for confirmation it is possible to use a digital signature if it is.

Processing of personal information is carried out according to the Federal Law No. 152-FZ "About personal information".

What more user will specify the information about himself by and will pass test, those have more than chances to become the assured user, or on another the moderator who spreads actual problems and proposes the solution of questions.

Any user who passed test and some kind of interview by means of video conference with site administrators can become the moderator.

Testing of users helps to define their required knowledge of the legislation in the field of management, and also responsibility and intentions of actions on information portal. The knowledge of laws and bylaws is obligatory as the participating citizen of the project promotes and influences the solution of questions of municipal and regional value.

Users are subdivided into three main groups:

– ordinary user;

– moderator;

– administrator.

The ordinary user has an opportunity to look through the offered ideas moderators, to vote for their relevance, to give the options in the section "Bank of Ideas". The rights are limited.

Moderators specify geotags of problem places or objects on the card, give the description and attach photos in confirmation, prove expediency of a question and offers actions for the decision.

Administration of the website have all potential on interaction with information portal, conducts interview with potential moderators, and also provides the general support of system.

Political activity of citizens has to will be dried within the Constitution of the Russian Federation, Federal laws, laws of the territorial subject of the Russian Federation and normative legal acts of MO. Participation in the project are carried out on a voluntary basis.

The interface of information portal "Management of Map" represents accurately structured according to sections, at the same time multipurpose, simple and convenient in use. The main interface will represent the map of the region where in the form of color indicators

(from green to red) depending on importance color changes. Also the status at what stage will be visible there is a question. The indicator is located according to location of a problem. When pressing the indicator button in a separate window information on a problem with the description, photos, the address, the author, date of the publication, and data of rating system of a question opens.

The navigation menu includes the following items:

– topical issues;

– the realized projects;

– bank of ideas.

The section "topical issues" will submit to the user the list of all problems subdivided into certain subjects (gardening, transport, infrastructure, etc.) and options the solutions proposed by the moderator.

"The realized projects" the section which will allow to estimate all activity of the project in general and to define its expediency of existence. Here the report on the realized ideas and what result will be provided received from realization.

"The bank of ideas" is an opportunity for all users to offer the options on improvement of the region.

The place of implementation of the project – any region of the Russian Federation, bodies of the state and municipal authority of the region.

Terms of implementation of the project can vary from two months to one year, depending on search of a manpower and performance of tasks in the put terms.

The first stage of implementation of the project means creation and maintenance of information portal, start of the website.

In the first year creation directly of the most information portal "Management of Map" by means of programmers, experts in computer graphics and in work with texts is planned, designers of the project who will constantly update and to watch its functionality; placement of the project on the server of provider (hosting); the analysis of demand for the realized project; production and advertizing.

The second stage – to develop mobile versions of the website in the form of the appendix.

For the second year of existence the application creation "Management of map" for convenience and timely providing information in authorities is planned.

The third stage is an extension of the project in other spheres.

After both stages are passed successfully, in the third year is planned to expand functionality of the project in other spheres, for example in providing information on perfect administrative offenses.

The analysis of demand offer on the Management of Map project.

As the project is directed to improvement of the social sphere of life of society, reduction of expenses of working hours of staff of authorities, to collecting primary information and increase of efficiency of administrative decisions, similar approach is the real solution of the existing problems and works in interests not only the population, but also authorities.

As the main competitor of the project already realized "Active citizen" Moscow acts.

**2. The used technical means**

The following equipment rooms and software are necessary for work of geoinformation service at regular control of serviceability of reserve elements on the computer of the user:

1. OS: Microsoft Windows of version 7,8,10.
2. COMPUTER type: IBM PC-sovmest. Personal computer.
3. Frequency of the processor is not lower than 1 GHz.
4. Existence Internet of communications.

**3. Special conditions of application and requirement of organizational, technical and technological character**

Conditions of use of the geoinformation Management of Map service have to conform to the modern requirements imposed to operation the Internet of services.

**4. Conditions of transfer and sale of program documentation**

Use of geoinformation Management of Map service as the administrator, at regular control of serviceability of reserve elements and documentation to it can be given to the interested person or the organization on the basis of the contract with OMGTU and authors according to the current legislation.

## ADVERTISING AND TECHNICAL DESCRIPTION "Electronic resource "15th scientific and practical conference of the faculty of VPI (branch) of VOLGGTU (. Volzhsky, 2016)"

*Volga polytechnical institute (branch) of federal public budgetary educational institution of the higher education "Volgograd state technical university"*

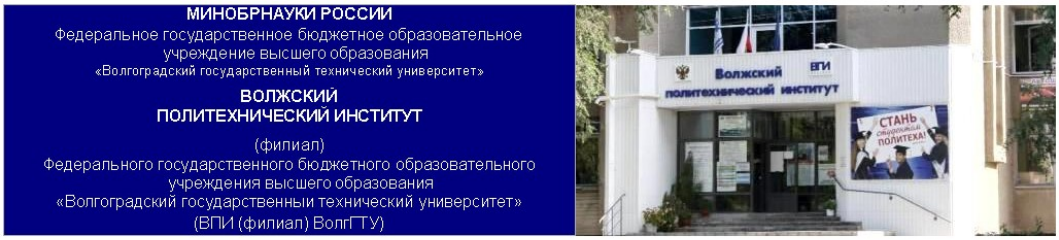
*Blaginin S.I.*

***UDC** 5*

***GRNTI** 06.01.13, 31.01.13, 20.01.13*

**1. Functional purpose of a product, area of its application, its appointment**

Electronic resource "15th scientific and practical conference of the faculty of VPI (branch) of VOLGGTU (. Volzhsky, 2016)" is the electronic collection of materials of the PPS VPI conference in 2016 and contains electronic and text data (2 files: 14.2 Mb). The collection is published according to the decision of publishing council of the Volgograd state technical university.




Содержание О диске

**15-я научно-практическая конференция профессорско-преподавательского состава ВПИ (филиал) ВолгГТУ (г. Волжский, 2016 г.)**

**(25-29 января 2016 г.)**

***Сборник материалов конференции (В 2-х частях)***

**Волжский, 2016**

Fetisov A.V. – chairman, candidate tekhn. sciences, associate professor, acting director of VPI (branch) of VOLGGTU.

G.M. quarrystones – the deputy chairman, the doctor of chemical sciences, the prof., the deputy director of VPI (branch) of VOLGGTU on scientific work.

Blaginin S. I. – scientific secretary of conference, chief of NIS VPI (branch) VOLGGTU.

Members of the organizing committee:

Dubrovchenko Yu.P., Drop V. I., Lukyanov G. I., Mustafina D. A., Nosenko V.A., Edge I.V., Rybanov A.A., Surkayev A.L.

МИНОБРНАУКИ РОССИИ
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(ВПИ (филиал) ВолгГТУ)

Тезисы докладов На главную

**О диске**

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Nizhny Tagil state social teacher training college (branch) of FGAOU IN "RGPPU"

Scientific and Innovative Center limited liability company

Orenburg branch of federal public budgetary educational institution of the higher education "Plekhanov Russian Academy of Economics"

St. Petersburg public budgetary educational institution of secondary professional education "Petrovsky college"

VO FGBOU Sterlitamak branch "Bashkir state university"

FGCVOOU WAUGH "Military academy of army antiaircraft defense of armed forces of the Russian Federation of Marshall of the Soviet Union A. M. Vasilevsky" Ministries of Defence of the Russian Federation

Federal public autonomous educational institution of the higher education "Bryansk state technical university"

Federal public autonomous educational institution of the higher education "St. Petersburg State University of space instrument making"

Federal public autonomous educational institution of the higher education "National research Tomsk state university"

Federal public autonomous educational institution of the higher education "Southern federal university"

Federal public budgetary scientific institution "Institute of Art Education and Cultural Science of the Russian Academy of Education"

Federal public budgetary scientific institution "Institute of Management of Formation of the Russian Academy of Education"

Federal public budgetary educational institution of the higher education "Ryazan state radio engineering university"

Federal public budgetary educational institution of the higher education "Omsk state technical university"

Federal public budgetary educational institution of the higher education "Nizhny Novgorod state pedagogical university of Kozma Minin (Mininsky university)"

Federal public budgetary educational institution of higher education "Magnitogorsk state technical university of G. I. Nosov"

Federal public budgetary educational institution of the higher education "Perm state national research university"